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To an Address of the Legislative Assembly, dated the 19th April, 1886, for a :

Copy of the report of a voyage made to the Canadian Labrador Coast in virtue of an Order in Council, by Mr. Saint-Cyr, ex-member and curator of the Museum of the Department of Public Instruction.

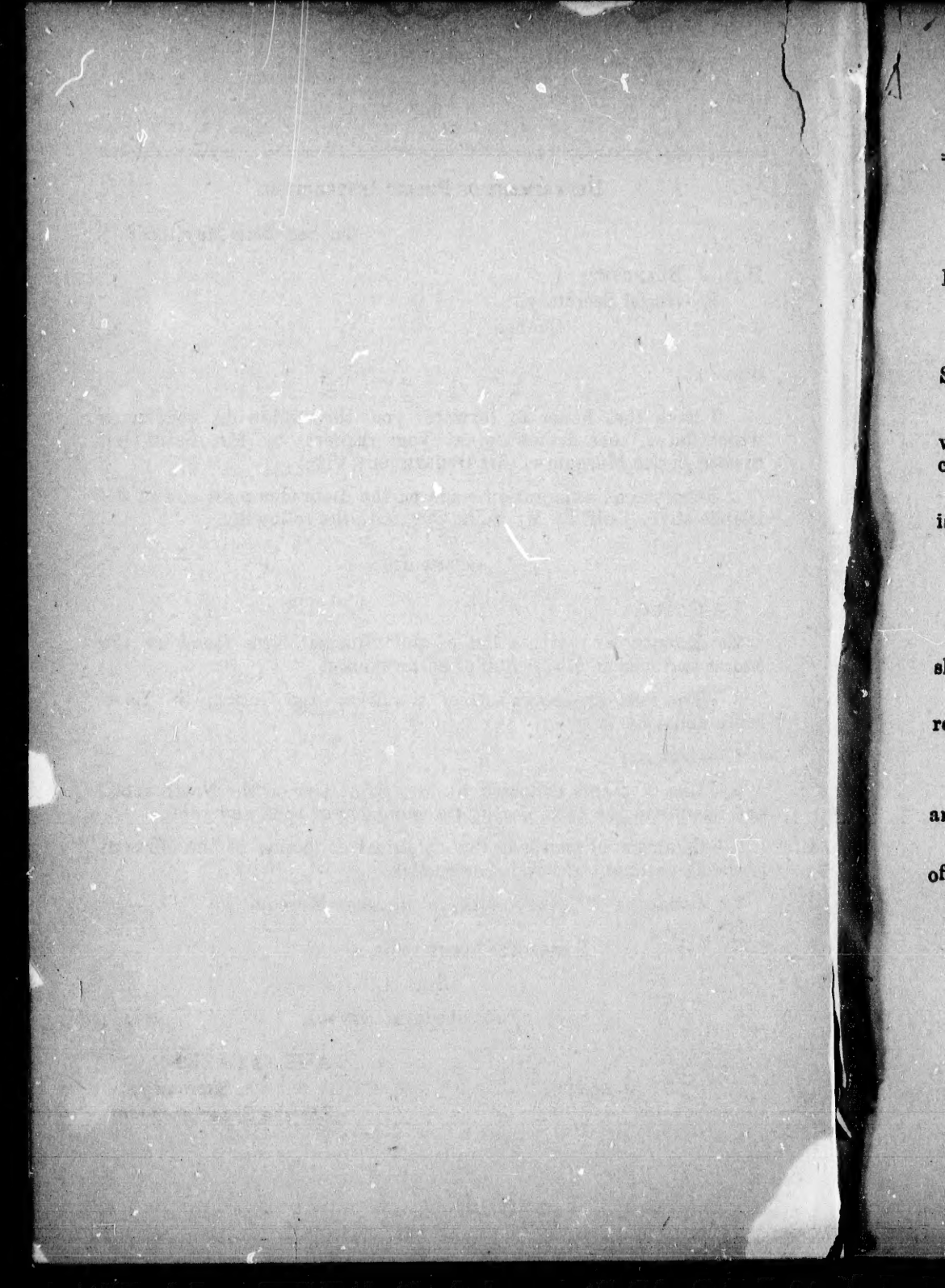
Also, a copy of his catalogue of plants and birds of the North Shore and of the islands belonging to the Canadian Labrador, which plants and birds are to be seen in the Museum of the Department of Public Instruction.

By order,

CHS. A. ERN. GAGNON,

Secretary.

Secretary's Office,
Quebec, 18th March, 1887. }



DEPARTMENT OF PUBLIC INSTRUCTION.

Quebec, 20th May, 1886.

Hon. J. BLANCHET,
Provincial Secretary,
Quebec.

SIR,

I have the honor to forward you the following documents which have been drawn up, at your request, by Mr. Saint Cyr, curator of the Museum of this Department, viz :

Report of an exploration made on the Labrador coast and in the islands of the Gulf, by Mr. Saint Cyr, with the following

APPENDICES :

- 1.—GUANO.
- 2.—EIDER-DOWN, with a list of the principal birds found on the shores and islands of the Gulf of St. Lawrence.
- 3.—The PINNIPED MAMMALIA of the River and Gulf of St. Lawrence and others.
- 4.—CETACEA.
- 5.—List of plants collected by Mr. Saint Cyr on the North shore and islands in the Gulf, during the summers of 1882 and 1885.
- 6.—Catalogue of plants in the botanical collection of the Museum of the Department of Public Instruction.
- 7.—Catalogue of CRYPTOGRAMIA, in the same Museum.

I have the honor to be,

Sir,

Your obedient servant,

PAUL DE CAZES,
Secretary,
For the Superintendent.

(Translation.)

To the Hon. W. W. Lynch,
Commissioner of Crown Lands,
&c., &c., &c.

SIR,

In obedience to instructions issued from the Department of Crown Lands, dated June 12th, 1885, I beg to submit the following report on my researches:

I availed myself of the interval which elapsed before news reached me of the arrival of the steamer with the exploring party organized by E. P. Bender, Esq.—and which I was to meet at Rimouski—to obtain all the information possible with regard to the districts I was about to visit, to be thus better prepared for my work.

I had received orders to be ready to start on the 20th of last June; but, owing to unexpected delays, the steamer failed to arrive at the *rendez-vous* at the date appointed.

I left Quebec on June 26th, and reached Rimouski the same day at 4.30 p.m. by the Intercolonial Railway. On June 27th there was no news of the steamer; I profited of this delay and visited several friends, and obtained information on several points. I must first thank Mr. L. N. Asselin, member for Rimouski County, for the pains he took to obtain for me useful information and also for the kind manner in which he placed his valuable library at my service.

I must also tender my thanks to Mr. Rouleau, advocate, who procured me several books on Natural History, from which I obtained some very useful information which was of considerable service to me on the expedition.

At length, the steamer for which we had waited for several days, arrived on the 28th in the morning; it anchored between the port of Rimouski and the East point of the island of Saint Barnabé. The name of this little steamer was the *Alaska*; it was 125 feet in length, driven by a 160 horse-power engine, and capable of running from 10 to 11 knots an hour in fine weather, and it was from two hundred and fifty tons burthen.

The weather which, until now, had been cloudy, suddenly became overcast and a cold rain and strong easterly wind set in. The captain seeing that bad weather was coming on, deemed it prudent to anchor to the westward of Rimouski harbour, where there was smooth water and he remained there till we started for Betsiamis. On Monday the 29th, I became acquainted with the other members of the exploring party. I may here congratulate Mr. Bender on his judicious selection of the members. Foremost amongst these, I will mention Mr Henry Allen, who appeared the life of the party, and who did not return to New York until he was fully assured that the expedition was abundantly fitted out in all details. Those gentlemen who went to Labrador were: Colonel W. H. Heiss, representing Mr. H. Allen, Mr. T. C. Evans, a distinguished writer, and Mr. A. W. Hale, chemist and geologist, Mr. C. Thom, landscape painter, Mr. T. H. Stead, amateur photographer, and Mr. Thom, junior; Mr. Saint Jean Lortie, notary, also took part in the expedition, as well as Captain Heppel, who acted as pilot. Captain T. G. Campbell, of Martha's Yard, was in command of the vessel, and the crew consisted of the chief engineer and his assistant, the mate, Mr. Mosher, and six sailors, a steward and a cook; in all we numbered twenty-two persons on board the *Alaska*.

We went on board on the evening of the 30th and passed a good night in spite of wind and rain. A thick fog covered the river and obscured the view beyond about three or four hundred yards from the vessel.

On the morning of the 1st July, the gale was worse than ever and augured no good for that day; as we could not start in such weather, we resigned ourselves to remaining where we were, and in passing the delay in the most useful manner. I availed myself of this forced stoppage on the South shore to acquire information respecting the importance of the fisheries which have been carried on there since time immemorial, both on the coast and in the numerous rivers which water that part of the province. Many different species of fish are caught there in large numbers, notwithstanding that the fishing gear is of the most primitive order.

The people seem unaware of the advantages they might derive by combining and working in concert, all animated by the same object and by thus placing a greater amount of capital at the disposal of an association. The development of our sea and fresh water

fisheries seems hitherto to have been left to private enterprise. Salmon, trout, shad, eel, sturgeon, bar, and white fish teem in the St. Lawrence and its tributaries from Point Levis to River Ouelle were the white porpoise fishing (*Delphinapterus beluga*, Cuv.) was formerly so good. Fifty four of these cetacea were caught in this latter place in 1884, and three thousand two hundred and forty gallons of oil were obtained from them; the skins sold for four dollars a piece, and the oil for fifty cents a gallon. To the above mentioned fisheries must be added that of the herring of which there were seven thousand seven hundred and four barrels taken, valued at from four to five dollars the barrel, and six thousand six hundred and sixty six barrels of sardines, valued at three dollars per barrel, or a total of nineteen thousand nine hundred and ninety eight dollars. These same fish are caught in abundance between River Ouelle and Green Island, and from this last station to Rimouski and also between Rimouski and Cap Chatte, so that the yield of the shore fisheries for that year may be valued at two hundred and eight thousand five hundred and ninety six dollars, (that is to say from Point Levis to Cap Chatte,) although the season was less profitable than usual. So much for the South shore, while on the North shore (the Saguenay included) the fisheries represent a value of sixty one thousand four hundred and eighty four dollars.

Twelve white porpoises, (*Delphinapterus beluga*, Cuv.) supplied the "Ile aux Coudres," with one thousand four hundred and forty gallons of oil, worth, with the hides, seven hundred and thirty two dollars.

I will have some remarks to make on white porpoise fisheries when I come to the subject of cetacea but I cannot pass on without expressing my regret that the energy of the Canadian nation exhausts itself in isolated efforts which produce scarcely perceptible results. Indeed the cost of fishing gear for a single individual for boats, nets, &c., is too great to permit the fisherman to buy them of the best quality and in sufficient quantity. An association is the only way by which the expense necessary for the proper carrying on of our fisheries may be met.

The first July ended as it had begun, with rain, wind, and fog. The sea broke with such violence on the jetty at Rimouski that the inhabitants compared the storm to the one which had taken place in the preceding Fall, when a part of the jetty was carried away by the

violence of the seas. Nothing of that kind took place on this occasion, fortunately. We passed this night like the one before, near Rimouski harbour. We were all eager to be on our way to Labrador.

On the 2nd July, the weather was not quite fine, but the wind had fallen and there was less rain. The fog lifted a little, and enabled us to make out the island of St. Barnabé. The fires on the Alaska were kept banked, so that we were ready to start at a moment's notice. At 7.45 a.m. Captain Campbell gave the signal of departure, and the Alaska leaving the quay, started swiftly in the direction of the Betsiamis river. At 11-15 we were anchored opposite the establishment of Messrs. Beaudet & Girouard, which is built on the right bank of that fine river. Mr. Bender landed, in order to invite the Rev. Father Arnaud to accompany us in our exploring journey among the islands and on the Labrador coast. Messrs. Thom and Stead went along the shore trying to obtain a good opportunity of exercising their artistic talents. The sun came out for a short while during the afternoon, and the fog partly lifting enabled us to distinguish objects on the shore pretty clearly. Mr. Bender and his companions returned on board about 5 p.m. without the Rev. Father Arnaud. It seems that he had waited for us several days, and upon our non-arrival, had started for his mission at Lake St. John. The long experience and the intimate acquaintance the Reverend Father had of the north shore and islands, and also of the riches under the waters of the River and Gulf of St. Lawrence, would have been of great service. Nevertheless we were obliged to continue our voyage without him.

At 5 p.m. a heavy rain and thick fog which enveloped the river from shore to shore hid the land from our sight. Our intention had been to pass the 2nd and 3rd July in St. Augustin Bay which lies about three miles west of Point des Monts lighthouse. We got there during the night notwithstanding the bad weather. On July 3rd, in the morning, although a strong East wind was blowing, the fog did not lift. Whilst we were anchored in St. Augustin Bay a cetacea of the family of Delphinidae, improperly called "Gibbar" by the inhabitants of those parts, rose to the surface to take breath a few yards from the Alaska. This animal (*Orca gladiator* Gray) which I will mention later on when I come to the article on CETACEA measured about from twenty to twenty five feet in length. It was doubtless in pursuit of some shoals of herrings or other fish, which it feeds upon. This animal is said to be very voracious.

At twenty minutes past nine we left the Alaska; we were rowed to the Points des Monts which was three miles off and which we reached at about ten a.m. After the customary greetings and a visit to the lighthouse keeper, Mr. Ferdinand Fafard, I turned my steps towards the forest, where I found in blossom a large number of plants of which I will give a list further on. Some distance from the lighthouse there stood the ruins of what appeared to be the former site of an important fishing station.

Pointe des Monts appears to be the eastern limit of the white porpoise (*Delphinapterus beluga*, Cuv.), whose habitat extends from the eastern extremity of the Island of Orleans to this point.

The Alaska had by this time anchored opposite Pointe des Monts in order to pick us up; we re-embarked after wishing our host good-bye, and continued our journey towards the river St. Marguerite which was our next station. The mouth of this river is situated about six miles West of the Bay of Seven Islands. Between the point and Trinity River we passed successively the islands of *Mai* and *Caribou*, good cod-fishing stations, also *l'Isle aux-Ceufs*, (Egg Island) granted Feb. 25th, 1661, to sieur François Bissot de la Rivière, under the name of seigniory of the "Ile aux Ceufs" and joined to the Crown lands, May 12th, 1733. This island is noted as being the place where part of Sir Hovenden Walker's fleet was shipwrecked, on the night of 22nd or 23rd of August, 1711. We then left on our left the river *Pentecote* the *Cayes Rouges* or "Ragged Island," Lobster Bay, Sproule Point and the *Caoui* islands where multitudes of sea birds resort, and among others, the duck commonly known as "Kakaoui" on the North shore (*Harelda Glacialis*, Leach.)

At 6 p. m. we anchored at the mouth of the Ste. Marguerite river where we intended passing the night. During the passage from Pointe des Monts to the river Ste. Marguerite, the fog which till then had appeared to hang on our heels, dissolved somewhat, and enabled us to catch a glimpse of the sun's pale disc which was not very reassuring. The fog soon became so thick that we could hardly see some hundred yards ahead of the vessel. Not a breath of wind stirred and the sea appeared to be covered with a coating of oil.

Mr. Bender went ashore that evening, to secure the services of Captain Talbot who has a salmon fishery in this district. This gentleman is well acquainted with the navigation of the North shore of the

River and Gulf of St. Lawrence. He would have been able to have guided the steamer Alaska through the thousand channels intersecting the islands which fringe the coast of Labrador as far as the straits of Belle-Isle. We once more met with disappointment. Captain Talbot could not leave his post without risking considerable loss. In the midst of the calm which prevailed we distinctly heard the flapping of wings and the cries of a flock of birds which we were however unable to see on account of the thick fog which enveloped us on all sides. There appeared to be several thousands of these birds and to judge by the flapping of wings and their cries they seemed to cover a considerable space. On the 4th the weather was still foggy, but it cleared somewhat about 8 a. m. We saw, for the first time since our departure, some SEALS which raised their head above water and appeared to regard us with a timid curiosity. These animals belong to the species *Phoca vitulina* L. and are called "Harbour seals" and "Bay seals," by the English colonists of the Gulf and by the French settlers on the coast *Loups-marins d'esprit*. I am told that they have been called by this last name because they come closer in shore than the other species, and that they are not afraid to enter the harbours, where they are easily captured. I will resume this subject later on.

We were now as I have before remarked only 6 miles distant from the Bay of Seven Islands and we advanced in that direction with slackened speed and also observing great precautions, on account of the foggy state of the weather. Our object in going to Seven Islands was to try and obtain a pilot from among the settlers of the district. But they were all unwilling to engage, as the cod was approaching and they were all employed in that fishery. We entered the bay of Seven Islands by the West channel, passing the following places successively on our left:—*Pointe à la Croix*, *Pointe Chassé* and the "Rocky Islands" of the west. This vast bay is large enough to hold an entire fleet. We anchored about one third of a mile from the sandy shore upon which the village of Seven Islands is built. It was then about noon. The weather brightened by degrees and allowed us to admire the vast proportions of this bay and the magnificent country which encloses it like a screen of verdure. The water here is deep and clear. Vessels of the largest size can anchor in perfect safety. There is good herring and halibut fishing inside the bay, and mackerel and codfish on the banks outside the islands which protect them from the sea breezes.

The Bay of Seven Islands was formerly the site of an important cod-fishing station. In 1881 an American schooner sailed one evening

into the bay of Seven Islands. These foreign fishermen during the night met a settler who sold them herring to bait their lines which were more than 4000 feet in length. Their fishing proved most successful. In about two days they had taken and carefully packed in ice over 70,000 lbs. of halibut of superior quality.

In 1882, whilst I was in the bay of Seven Islands two American schooners came to catch mackerel to the South of the Basque Islands, and returned from there in two days, with a catch of eight hundred barrels of this excellent fish, which the master of one of the schooners considered that he would have no difficulty in selling for at least twenty dollars a barrel in Boston. The cod-fishing, notwithstanding the injudicious way it is conducted, also yields fair profit. Herring may be caught in the bay in almost incredible numbers in certain years, but I am bound to admit that there, as in other places, the fisherman's outfit is of the most primitive kind. Capital is needed, which the fishermen lack, and without which it is impossible to obtain suitable fishing gear. These poor folks, are content with informing us that they cannot afford to buy improved fishing gear, such as foreign fishermen use. The spirit of association is lacking among them.

To the North of the bay, in a small river called the Grand Rapid river a large deposit of magnetic iron is found. The sailors of the bay use it as ballast for their schooners, and fishing boats; they prefer this ore to all others for ballast, on account of its weight. Now, for the first time since leaving Kimouski, the sun shone in full splendor from 1 o'clock till 8 p. m. During the afternoon, we paid our respects to Mr. Wilson, the agent for the Hudson Bay Company at this station. This gentleman, furnished us with some very useful information respecting the resources of the bay, in particular, and of the coast in general.

I took advantage of the few minutes at our disposal, to enter the forest, and takes notes on the vegetation. Trees of the coniferous family are the most numerous, I noticed amongst others the "Grey Pine" wrongly called "Cypress" in Canada. (*Pinus rupestris*, Mich). I will give further on a list of the plants in this locality.

On the next day, July 5th, at 6 a. m the fog was so thick, that we could not distinguish the land. But it lifted somewhat at 10 a. m. owing to a slight breeze setting in from the North. At 10.30 we weighed anchor and steamed out of the bay, taking the middle chan-

nel leaving on our right Point Chassé and the islands of Manowin and Carousel, and on our left, that is to say to the East, the "Basques" islands. Quite close to the island of Manowin and connected with it at low tide, is an island where a very fine quality of limestone is found. In the northern part of the island (which part is also the highest above water) there are beds entirely composed of univalve shell-fish especially of *Murchisonia*. It is from this calcareous island that lime-stone was obtained for the forges on the river Moisie. It appears that the rich deposits of magnetic iron of the Grand Rapid River, which is a tributary of the bay of Seven Islands, were granted to the late Moisie Company.

After leaving Seven Islands we shaped our course for the Perroquet islands where the first scientific observations, the object of our voyage, would be taken. At noon, the weather was clear enough to enable us to make out the land. We passed, on our right, the river Moisie known for its large salmon and cod fisheries, the first managed by Messrs. Holliday & Co., and the second by Messrs J. & E. Collas who own considerable establishments on the right bank of this river.

The shore opposite to the bay presented to our gaze the ruins of the forges of the Moisie Company. This river is considered to be one of the most, if not the most important river, on the North shore of the Gulf of St. Lawrence.

Continuing our route from there, we passed before Point St. Charles which is the limit of Moisie Bay, then Cormorant point which formerly bounded on the east the *Poste du Roi*. This part of the North shore comprised within the limits of Egg Island and Cape Cormorant was united to the Crown domain by virtue of the *ordonnance* of the Intendant Hocquart, May, 12th 1733. and which, as regards the concession of the *Ile-aux-Ceufs* reads as follows :

"We have united to the domain of His Majesty, the said lands granted to the said Sieur Bissot, from and comprising the said *Ile-aux-Ceufs* as far as Cormorant Point, which is four or five leagues below the said river Moisie.

We will revert to this subject when we speak of the *Postes du Roi*. It was at Cormorant Point that the heirs of the late Mr. Bissot, above mentioned, placed the western limit of the seigniory of the *Terre Ferme de Mingan*.

Continuing our route, always towards the East, we pass the rivers *Aux-Bouleaux* (the Basin river of the late Amiral Bayfield) the Rivers *Manitou* the *La Chaloupe* and *Tonnerre* which last is known for the quantity of magnetic iron imbedded in the granite cliffs on either side of its mouth and which stretch for a considerable distance along the shores of the Gulf of St. Lawrence. Then the Sheldrake and Magpie rivers, known as important codfish stations owned by the Gaspé merchants Messrs Le Bouthillier, Collas and Robin. The river St. John empties itself eight miles East of Magpie point; this river was twice the eastern limit of Lower-Canada, and was the former boundary between the latter province and Newfoundland.

About 8 p.m., we anchored for the night between the Perroquets islands and the mouth of the St. John river. On July 6th, we had a fair breeze from the southwest which did not disperse the fog however. We soon heard cries from innumerable birds, without being able to get a glimpse of them. We also heard the breathing of a GRAMPUS (*Orca gladiator* Gray), and also the crying of some seals of the species *Phoca vitulina*, L. These did not long remain above water, but had to seek cover from the young Nimrods of the party who never lost an opportunity of firing at whatever showed on the surface of the water. The grampus and seals no sooner approached near enough to allow us to observe them than they were treated to a fusilade which was harmless on the animals, and only had the effect of frightening them and keeping them at a distance from the vessel.

At 8 a.m., on the kind invitation of Mr. Bender, I accompanied a party of explorers to the Perroquets islands. It was asserted that these islands, whither multitudes of sea birds resort, were covered with GUANO. It affords me satisfaction to state that, as an eye witness, I was able to examine into the truth of what has been reported for so long, to wit: that these islands contain considerable deposits of valuable manure. We landed on the most western island, which was composed of calcareous rocks in a compact mass, of almost quadrangular form, rising abruptly about thirty or forty feet above sea level. The East and South sides of the islet slope gently down to the water's edge. It may not be out of place if I mention a fact which I observed in all the calcareous islands in the Gulf, which I had occasion to visit, and which I have already touched upon when speaking of the calcareous islands of Seven Islands; I have invariably noticed in the islands of Mingan, Anticosti, &c, that the northern

shores of the islands always terminate by steep cliffs which in some places rise to the height of two and three hundred feet, and the sea at their base is very deep, whereas the opposite shore is a gradual slope down to the sea level.

The islet we landed on is only covered with grass. It slopes towards the South, and is covered with a bed of very rich mould varying from a depth of six to eighteen inches. It is in this mould that the SEA PARROTS (*Mormon Ill.*) hollow out holes in which they lay their eggs and keep their young ones, until they are big enough to provide for themselves. This mould is rich in fertilizing principles, as proved by the size and succulence of the plants which grow there, and which attain a diameter of from an inch and a half to even two inches, such as the COW PARSNIP (*Heracleum lanatum*, Michx.) the HEMLOCK (*Conium maculatum*, L) and LIGUSTICUM (*Ligusticum Scoticum*, Linn). This mould, rich though it be, is certainly not guano, whatever may be said. Here there are innumerable quantities of birds which make their nests in the ground after the manner of the SEA PARROTS (*Mormon, Ill.*), or in fissures of the rocks like SEA-SWALLOWS (*Sterna*, L.) or on the surface of the land like SEA-GULLS (*Larus*, L) SEA-PIGEONS (*Uria Briss*) PENGUINS, (*Alca* L); EIDER (*Comateria*, Leach) &c., &c., &c.

We then crossed over to the second of the Perroquet Islands, situated South East of the first. This island varies somewhat from those we had just visited with regard to its geographical formation, flora and fauna.

It appeared to me less elevated above the level of the sea and to have a somewhat larger superficies. After this hasty exploration, we returned on board the *Alaska*.

I will add that there are neither trees, bushes, nor shrubs on these islands. There is vegetable growth on only two of them, whilst the two others, which we only saw at a distance, appeared nothing more than sand banks with a sea breaking over them, and are celebrated as being the scene of many a shipwreck.

At 10.25 a.m. we left the mouth of the River St. John, known for its extensive cod-fishing establishments and also for its fine salmon-fishing. At 11 a.m. we doubled the Long Point of Mingan, where there are several more cod-fishing establishments. An hour later the steamer *Alaska* anchored in Mingan harbour, opposite the

Hudson Bay Company's Post. At noon, the clouds having cleared away, we were enabled to admire the fine harbour of Mingan, bounded on the South by the high cliffs of calcareous stone of the island of the same name, and on the North by a sandy beach covered with trees of a fair growth.

After wishing good-bye to Mr. Lannon, the Company's agent at Mingan, we left for Esquimaux Point. Mingan post is noted on more than one account. Messrs. Bissot and Joliette established a fishing and trading post and did a thriving business there.

We had hardly left Mingan harbour before a veritable fog bank completely hid the islands from our view; we passed through the midst of them about several hundred yards distance. We moved along at snail's pace, which was fortunate for us, for on arriving opposite Quarry Island, one of the Mingan group, the prow of the *Alaska* stuck in a sand bank. This was an hour after we left Miugan harbor. Happily, it was only half-tide, and we had reason to hope that we would get afloat again in two or three hours. The captain lifted the bows of the vessel by placing the heavy freight in the stern. About 5 p.m., thanks to the power of her screw the vessel was got off and continued its way as well as it could, in the direction of Esquimaux Point.

As the fog was getting thicker, we were compelled to anchor in the midst of the islands, in about seven or eight fathoms of water. A strong South West breeze dispersed the fog a little, and showed us that we were anchored in the channel between the Moniac and Niapisca Islands. Up to 8 p.m., the fog steadily increased. Captain Campbell, seeing the impossibility of steering through the islands in such weather, resolved to spend the night in this place. The wind blew with violence. But we were in safety as we were sheltered by the island from the full force of the wind.

On the 7th July, at 6 a.m., the wind veered round to the North West, and as the weather seemed to have cleared a little, we weighed anchor and after endeavouring to find our course for about an hour, we were obliged to anchor once more on account of the fog. Some minutes later we distinctly heard the sound of a bell. This showed us that we were not far from Esquimaux Point. The captain once more weighed anchor and steered in the direction of the sound, for want of a better guide. A quarter of an hour had scarcely passed

before we would make out through the fog, first the steeple, then the whole church, the village of Esquimaux Point, opposite which place we anchored at 8 a. m. to the minute, at a distance of about one hundred and fifty yards from the sandy shore on which it is built.

The fog disappeared as though by enchantment and we were able to admire, at our ease, the fine sheet of water in the bay, bounded on the one side by the sandy shore on which the village is situated, and on the other by the large and fine island of the same name, which is covered with luxuriant vegetation. At 1.30 we went to pay our respects to Monsignor Bossé, Apostolic Prefect of the North Shore, who received us with great courtesy, and also spoke at length on the resources of the North Shore and the livelihood of the inhabitants, who are dependent on the fisheries for both food and clothing.

Monsignor Bossé appeared enchanted on learning that a powerful company intended carrying on the rich fisheries of the Labrador coast on a large scale, and that this company had resolved to select in preference the services of the dwellers on the coast, who are good fishermen and able seamen, inured to the hardships of a fisherman's life and those of navigation.

Monsignor Bossé considered the establishment of this company, on the coast of Labrador, as a new era of progress, especially if it shared the profits realized with the fishermen, as nearly all the American traders do with their employees. By such a system the Canadian and Acadian fishermen would be induced to take an interest in the scheme, and it would conduce to its success. Indeed there is no better way of creating emulation among the company's servants than by giving them a share in the profits.

Esquimaux Harbour which lies about 18 miles East of Mingan harbour is formed by Esquimaux Point, and the island of the same name opposite. This port is sheltered from all winds, and a numerous fleet of the largest tonnage could float there.

In 1855 or 1856 two fishermen's families from the Magdalen islands, came to live at Esquimaux Point, with the object of catching cod on the North shore, and hunting furred animals in the neighbouring forests. In 1858, there were fifteen families of fishermen, dwelling in this place. The new arrivals intended to hunt seals on

floating ice, in the spring, and to fish for cod, herring and mackerel during the summer.

The village of Esquimaux Point continued to grow so rapidly that in 1861 there were already thirty seven Acadian families from the Magdalen islands.

The fishermen had been very successful since their advent on the North shore. There were no large fisheries near Esquimaux Point : but a good harbour, facility of procuring fresh water, and wood in abundance, made it a very suitable place for an establishment. Although the soil is sandy, vegetables grow very well in it. At the present time Esquimaux Point is the see of an Apostolic Prefecture, where the first incumbent Monsignor Bossé has already wrought great reforms and done immense good. The village possesses a fine church, and a good parsonage. There are three very well managed schools for the purpose of educating the settlers' children ; also a post office and custom house, both of which are well managed. There is no doubt that when once improvements have been set on foot and with a more intelligent and less parsimonious management of the rich fisheries of the North part of the Gulf of St. Lawrence, this village will enjoy a prosperous future.

Esquimaux Point is frequented by coasting schooners from Quebec and Halifax.

In 1881, the products of the country for Spring and Summer were as follows—which results I obtained when on the spot in 1882 :—seventy-two gallons of seal oil, sold from 35 to 40 cents per gallon ; twenty-four thousand seal-skins, sold at 60 to 70 cents a piece ; eight thousand eight hundred and fifty quintals of dried codfish, at from 4 to 5 dollars the quintal, and five thousand nine hundred gallons of cod liver oil, valued at 50 cents a gallon ; seven hundred barrels of herrings, from 3 to 4 dollars the barrel.

That year was considered the most extraordinarily productive, since the colony was founded.

Esquimaux Island supplies a good quantity of timber and produces a great variety of plants.

Mr. Bender had by this time succeeded in engaging a pilot who engaged to take us to any part of the coast we might wish to visit.

At 2.30 we bade Monsignor Bossé farewell, and started with a very pleasant recollection of that prelate, as well as of the inhabitants of that part of the coast.

As the fog was already beginning to gather around the islands through which our course lay, Captain Campbell seized this opportunity, as the fog was not very thick, to keep off the coast. At 8 p.m. the weather was still fine, although a little foggy. The vessel ran, that night, about 8 knots an hour until daybreak next day, which was the 8th July. The fog soon came down again from all sides, and hid from view the land which should have been on our left. Fearing to run aground, or on reefs, we stood away from the coast.

The North East wind blew strongly and brought us cold and fog from Newfoundland and the straits of Belle-Isle. For the whole of the 8th and the following night we were shrouded in a thick mist, and hardly knew where we were exactly. A fine sleet fell all night.

On the 9th at 4 a.m., the rain was still falling in torrents and lasted until eight o'clock, followed by a fog so dense that it was impossible to see the surface of the water, a quarter of a mile from the ship. We had not seen land since we had left the Esquimaux islands.

Captain Campbell thought it unwise to proceed in such dense weather and he hove the vessel to. The wind increased hour by hour, enormous waves caused the steamer to pitch and roll in a manner most unpleasant for those unaccustomed to a storm at sea. However the Alaska behaved very well, and as the waves did not wash the deck, the passengers were able to stand upright, holding on the rigging and thus avoiding the unpleasantness of sea sickness by remaining in the fresh air. For myself, I had hitherto nothing to complain of and as I did not think we would experience worse weather than this, I hoped to come through all right. No change for the better that evening.

The 9th was more stormy than the 8th, and after having been tossed about all day, we had to go to bed, with no prospect of its clearing up that night. We still remained hove to, that is to say rolling and pitching all night. I was happy in not suffering from sea sickness; I had sleeplessness in its stead.

On the 10th July, in the morning, the wind fell, and as the vessel became more steady we could take a little exercise without fear of falling. The fog lifting enabled us to perceive some seabirds which were winging their flight towards the isles where they had their nests.

Amongst these birds were:—GUILLEMOTS (*Uria*, Brisson), TERNS (*Sterna*, L), SEA GULLS (*Larus*, L), PUFFINS (*Mormon*, Ill.), and others which I could not recognize on account of the fog which still covered part of the sea. Here and there a couple of DIVERS (*Colymbus*, L), glided lightly on the waves, diving at the least sign of danger.

We passed successively to the right of the reefs of *Ste. Marie* the Island of Watagheistic, the *Ste. Marie* islands, bordered with reefs and breakers; the Black Rocks, which we could clearly see, being not more than half a mile distant from them. The noise of the breakers was like the rumbling of thunder. Before noon we had passed on our left the island of *Petit Mecatina*, which island is almost divided in two by Salaberry Bay. Towards ten o'clock we reached the West bay of *Grand Mecatina* or *Gros Mecatina*, as it is called by the dwellers on that coast, and we dropped anchor in about seven or eight fathoms of water. The island of *Grand Mecatina* is about three and a half miles in length, from North to South, and three miles in width; its highest elevation in the centre is five hundred feet. Several islands are in the neighborhood, and they protect the interior of the bay. This island possesses two good harbours, where the largest vessels may anchor in safety. This island is the haunt of sea birds. *Platte* Island, as well as another, were visited on account of the guano which was said to be accumulated on it, but there, as at the *Perroquet* islands, the supposed guano was nothing more or less than a mould which was rich enough in its way, but not at all of the nature of real guano. We obtained from *Platte* Island about half a bushel of eggs of the following birds: GUILLEMOTS, PENGUINS, BOOBIES (*Sula*, Briss.), SEA-GULLS, &c. I did not notice the EIDER duck's egg amongst these; it is therefore useless to seek for eider-down there.

The RING DIVER, in French vulgarly called *Huard* and Loon in English (*Colymbus torquatus*, Brunn.), was heard and seen each time the fog lifted sufficiently to let us see three or four hundred yards around the vessel. The island of *Grand Mecatina*, thanks to its two good harbours, and the facilities for obtaining wood and fresh water, is much visited by the Gaspé and Newfoundland fishermen. The

Nova Scotia and Newfoundland fishing boats repair thither in great numbers for the cod, mackerel and herring fisheries. A large number of seals are killed there at the commencement of the Winter and spring. The most common species and those which have also a greater value are the HARP-SEAL (*Phoca groenlandica*, Fab.) and the HOODED SEAL (*Cystophora cristata*, Nilss), (*Phoca cristata*, Gm). The fishery overseer at *Grand Mecatina*, Mr. Louis Gaumont, has killed about about four hundred in a single day. This hunting is continued from the end of November until January and during April and May. I will allude to this again further on. A large number of fishing boats, each manned by two men, were engaged catching cod-fish.

The other fish which I noticed in the *Grand Mecatina* waters were the HERRING (*Clupea harenqus*, Mitch), the SARDINE (*Clupea Sardina*, Duhamel), the HALIBUT (*Hippoglossus vulgaris*, De K.), the TUNNY *Thynnus vulgaris*, De Kay), the PLAICE (*Pleuronectes planus*, Mitch.), the SAND-EEL (*Ammodytes lancea*, Ayr), the SMELT (*Osmerus viridescens*, Le Sueur), the CAPELIN (*Mallottus villosus*, Cuvier). Crustacea are also fished for there, such as Lobsters and Crabs. The following Molluscs are found in abundance, but not in great variety: COMMON LIMPETS (*Mytilus edulis*, L.), COCKLES (*Mya arenaria* Linn.), WELKS (*Baccinum*, Brug.), PURPLE-FISH (*Purpura*, Brug. L.), PERIWINKLES or LITTORINES (*Littorina*, Ferussac). Echinodermata are also found there, such as SEA URCHINS (*Echinus*, L.), STAR-FISH (*Asteracanthion*, Stimpson).

So much for the sea, let us now pass on to the land.

The trees scarcely exceed a height of from six to twenty feet. These are: FIR, SPRUCE, DWARF BIRCH, WILLOWS, ALDER and small fruit trees, such as the WILD RED CHERRY, the JUNE BERRY, the ASH, the JUNIPER, the VACCINIUM, the CROWBERRY, the ALPINE BEARBERRY (*Arctostaphylos alpina*, Linn.) and others, of which I will give a list later on. We still saw on the North slope of the hills on the island banks of snow and ice, which we could distinguish from a great distance.

Gros Mecatina post is a very ancient one. During last century it paid well, and was included in the Pomereau Concession. It is held to-day by Mr. Louis Gaumont, who appears to be doing well there.

After exploring the two shores of West Bay, and having gone over the island in every direction, for the purpose of studying its

Geology, Flora and Fauna, were embarked on the *Alaska* to spend the night, well satisfied with the objects we had seen, and the information we had obtained from the fishermen, who were there in large numbers engaged in the codfishery which was just commencing.

On the morrow July 11th, we recommenced our explorations. I managed to add a good number of plants, molluscs, &c., to the collection I had already begun at *Pointe des Monts*, &c., &c.

If the complaints of the inhabitants of the coast, and those who carry on our fisheries, are to be believed, then the North part of the Gulf is infested by a host of foreign fishermen, who take our best fish from under our very eyes, thanks to their improved fishing tackle and especially to the use they make of the nets called "trap-nets," by means of which they soon get their load of fish, while their swift-sailing schooners of thirty or forty tons, manned by crews of from ten to twelve able seamen, thread the islands in the midst of which they know where to find hiding-places, whence they start small boats to pillage eggs and sea-birds' feathers. I have no doubt that they are those of useful birds, for like many others, they are disappearing, victims of the rapacity and the improvidence of man. It is but necessary to mention that the GREAT PENGUIN (*Alca impennis*, L.) one of the birds the most sought after which already ranks among the extinct species in the Gulf of St. Lawrence.

On the 20th April 1870, Professor James Orton wrote that there were at that time three specimens of this bird in the museums of the United States; one just added to the collection in the Smithsonian Institute, Washington, another in the Academy of Natural Sciences, Philadelphia and the third in the Giraud Collection at Vassar College. The latter specimen, which is the most complete and the most perfect, also possesses a great scientific value, for it is from this specimen that Audubon prepared his description and made his drawing of the Great Penguin. This bird was caught on the Banks of Newfoundland.

The GREAT PENGUIN or GIANT AUK, also called Garefowl, has not, fortunately for itself and for us, lived long enough to receive more than one scientific name. The celebrated Linnaeus who knew the bird called it *Alca impennis*, which name it still bears. It was about the size of a goose, with a large head and curved beak grooved and flattened laterally; its wings, which were only rudimentary, were

adapted only for swimming, in which respect it resembled the PENGUINS of the Southern hemisphere. Its digits were united by a single membrane and the posterior one was wanting. Its plumage was black on top and white beneath as were also the tips of its wings and it had an oval patch over each eye.

The GIANT AUK was a bird of the Arctic regions, being found only in the Faroe Islands, Iceland, Greenland and the islands around Newfoundland, &c. Nuttall says that the GIANT AUK, a degenerate specimen of the feathered race and almost classed amongst the amphibious monsters of the deep, seemed destined to dwell in solitude in the desolate regions of the earth. But although it could not soar in the air it was unrivalled as a diver and could swim with wonderful speed.

Its food consisted chiefly of fish and marine plants. It laid only one egg, five inches long and curiously marked with figures resembling Chinese characters. It deposited this egg in the interstices of rocks or in deep holes which it dug out with its beak. The only sound it was ever heard to make was a sort of murmur or cooing. Although formerly existing in great numbers on the shores of the Atlantic Ocean, it is now believed to be quite extinct. In 1884 two were caught near Iceland but since then none have been seen or mentioned that he (Professor Orton) knew of.

However Mr. R. Dean says (Am. Nat. N. 368) that a specimen was found in the neighborhood of Saint Augustin in Labrador in November 1870. See also *Les oiseaux du Canada* by Mr. C. E. Dionne, page 260, in the foot note.

In connection with this bird, the celebrated ornithologist, Dr. Elliot Cowes, says that he knows of four specimens in the United States of America; the three above mentioned and a fourth in the museum of Harvard University, Cambridge, Massachusetts.

The complete extinction of a species is certainly a remarkable event. By which of the great extinguishing causes which are now slowly but unceasingly working in the organic world, has the GIANT AUK disappeared from the position assigned to it by God amongst living creatures? Is its removal due to the rising or sinking of terrestrial strata or the encroachments of stronger and more active

beings than itself or yet to the changes which occur in climate? No one can tell precisely. We have had no knowledge of any such change having occurred on our Northern Shores which could affect the essential conditions of existence of this denizen of the Northern seas. The bones of this bird which are found in great numbers on the coasts of Greenland, Newfoundland, Iceland and Norway show in what numbers it existed in former days. But during the past hundred years it has become scarcer and scarcer and has finished by entirely disappearing about the middle of the present century. Why? There are no better physical reasons for the disappearance of certain species than for man's not continuing to live forever on earth. We might perhaps say, with the illustrious Buffon that the GIANT AUK has ceased to exist because time has conquered him. From the *Lingula prima* of the Lower Silurian soils to the GIANT AUK whose bones are found in the sands and beds of humus in process of formation, the genera have constantly lost some of their species and the species have lost some of their varieties.

A bird which greatly resembled the GIANT AUK the DODO of the Isles of Mauritius and Bourbon also disappeared at the end of the 17th century.

It was with this bird, as with the WAPITI or ELK of Eastern Canada, which formerly abounded on the banks of the St. Lawrence and of the Ottawa, and where it is only known to-day by its large bones and huge antlers which the settler sometimes turns up, when ploughing his newly cleared fields. This animal is now no longer found except in the Rocky Mountains, where it will doubtless soon disappear altogether.

We had employed the two fine days we had had since entering the West bay of Great Mécatina in exploring this island, and also the neighbouring ones, and in obtaining useful information relating to seal hunting and whale fishing; we had carefully consulted with the most intelligent inhabitants of the coast, as to what would render our fisheries more productive, less costly, and more remunerative to them, and to fishermen in general, and as to how they could be best protected from the rapacity of foreign ship-owners.

We were all on board the *Alaska* at 5 p.m., and the gentlemen of Mr. Bender's association, decided not to extend the present exploration, on account of the changeableness of the weather. They con-

sidered that nothing could be done as regards Guano, eider-down or sea-bird's eggs. Whilst on the other hand they decided that fisheries in the Gulf of St. Lawrence would become a paying enterprise, if conducted by men of experience, and provided with sufficient capital. It was then resolved by these gentlemen that the present exploration should end at this point. Therefore, after bidding farewell to the inhabitants of the islands, we weighed anchor and left West Bay at 5 p.m. We doubled the cape on the East point of the Island of Anticosti against a strong West wind, that is to say, a contrary wind. The East point of the Island of Anticosti is about 180 miles West of *Grand Mecatina*. The night was fine, although it was blowing hard. On the 12th in the morning, we perceived the light-house on the East point of Anticosti, which we doubled about 8 o'clock. This part of the Island of Anticosti, like the South Shore, appeared very little elevated above the level of the sea. After having coasted along the island, towards the South-West Point, we then headed towards Gaspé Bay. At 8 p.m. the West wind was so strong, that for the first time the water broke on the deck of the vessel.

As we neared the South coast a whale rose quite close to the *Alaska* and spouted out a column of water, or rather steam, to a height of from 15 to 20 feet. It is to be supposed that the huge cetacean either saw the steamer or heard the noise of the screw, for when he reappeared on the surface, he had changed his course and was going at right angles to the one he was pursuing before, and he kept in that direction as long as we could make him out. Captain Campbell, who for twenty-five years had been engaged in whaling, told us that this one was of the species called SULPHUR BOTTOM by the English, the *RORQUAL* (*Balaena roqual*, L.).

At 5 p.m. we could make out the Gaspé coast pretty clearly. The wind, violent till then, now fell as we approached the land, which was unfolding one of the most beautiful panoramas I ever seen. We soon doubled Cape Rosier and entered the fine harbour of Gaspé, which we traversed through nearly its whole length. We anchored at 8 p.m. at about two hundred yards from the steamer *Admiral*, to which we were transhipped during the evening, after wishing our friends goodbye and a safe return to New York. The steamer *Admiral* started the next morning at 1 a.m., and as I had forgotten to tell the steward to awake me, I lost the fine panorama which the sight of Cape Percé and the picturesque villages of the same name offered. When I did awake on the morning of the 13th, we were passing Grande

Rivière village and the weather was magnificent. There was a slight breeze from the North-East and the Baie des Chaleurs was covered with codfishing craft. Flocks of sea birds were flying in all directions, and amongst others I noticed the CORMORANT (*Phalacrocorax Carbo*, Briss.) with a hooked beak, a great destroyer of fish, of which it eats about three and four pounds per diem, that is to say, half its own weight, SEA-GULLS, GUILLEMOTS, BOOBIES (*Sula Bassana*, L.), &c. At a quarter to nine we stopped opposite Messrs. Robin & Co's establishment. This is the headquarters of that great firm. It is said that at this post alone, Messrs. Robin & Co. employ more than four thousand men during the codfishing season. In addition to this, the same company has large establishments on the North Shore and elsewhere for fishing and preparing the cod.

At 10.15 we stopped at New Carlisle, the residence of the Honorable Théodore Robitaille, then we left successively on our right, the fine villages of Bonaventure and Capelin which are connected by a fine bridge; New Richmond where Messrs. Montgomery have their large saw-mills; Cascapedia, where His Excellency the Governor General resorts to catch salmon during the season in the month of July; Maria extending along the coast with conical mountains in the back-ground; Carleton, New-Carlisle, the *chef-lieu* of Bonaventure county, Nouvelle, &c.

The water was as smooth as a mirror, and we could see MEDUSAE (*Oyanea arctica*, Les) of a thousand metallic hues stretching out their thousand tentacles in the transparent waves. At 3.15 we were alongside of the jetty at Dalhousie, New-Brunswick.

On the 14th, at 7.20 a.m., we took the branch line from Dalhousie, and at 8.15 we reached Campbellton, on the Intercolonial Railway. At 8.30 p.m., we reached Levis in a beating rain. In other words, we ended our journey as we had begun it.

I conclude this report by the remarks which I have already made, in the abridged report which I had the honor of submitting to you on the 12th of last September, with the addition of the opinion pronounced by the Commissioner of Fisheries of Canada, in 1874, relating to the destruction of seals in the Gulf of St. Lawrence.

I should first observe that as regards guano, eider-down and eggs, which are said to be found in enormous quantities both in the islands

and on the North shore of the Gulf of St. Lawrence, I can only speak from hearsay, not having myself visited those islands where report says these products abound. I only visited two of the *Ferroquet* islands and the *Grand Mecatina* islands, in which places the supposed guano was nothing more than rich mould, as the luxuriant growth there testifies.

There were numbers of sea birds in the islands we visited, and these islands are literally covered with their nests. The laying season, which is the most profitable time, was already somewhat passed, for the young birds were as big as the old ones, the only discernible difference being in the colour of their plumage.

Some eggs, which were found, were either late ones or a second laying. The numerous nests on the island show that a good harvest of eggs could be obtained at the first laying. I saw neither the EIDER DUCK in those islands that I visited, nor eider-down. For feathers, the best time to obtain them would be when the young birds are full grown.

I may here remark that if eggs are taken in Spring during the laying, and the birds are killed in Summer for the sake of their feathers, the islands will in a very few years be destitute of game.

In addition to what I have already remarked of the GREAT PENGUIN or GIANT AUK (*Alca impennis*, L.), I may add that it is without contradiction one of the most remarkable of birds on account of its height, and the thickness of its skin, which the inhabitants of the North use as a very warm winter garment. A GIANT AUK's egg would cost to-day from one hundred and fifty to two hundred dollars, and a well preserved specimen of the bird itself would cost six hundred dollars. Not only has this bird been exterminated in the North of the Gulf but also in the Greenland and Iceland seas.

It is unfortunately too true that certain settlers on the coast, but more especially strangers from Nova Scotia, from the State of Maine and the Island of Newfoundland, pillage the sea birds' eggs, which they carry off to sell in their own country. These years past as many as thirty schooners have been counted, engaged in obtaining loads of wild birds' eggs in the islands of the Gulf, and, to make matters worse, when these pillagers observe that the eggs are hatching, they break them, in order that the old birds may lay more.

Then all these fresh eggs are taken away, and it is thus that thousands upon thousands are destroyed every year.

I think that what I have said will suffice to prove that in the present state of things guano, eggs and feathers, would not be a paying enterprise. A company which would see to the protection of sea-birds would certainly deserve the support of the government. As for the gulf fisheries, they offer a vast field for enterprising spirits. Our cod, herring, mackerel fisheries, &c., have hitherto been considered inexhaustible. However, this wealth has in a great part become the prey of foreign craft which come to this province. The fishermen of New England, Nova Scotia and the Island of Newfoundland, carry off an enormous quantity of fine fish every year, without profit for the inhabitants of this province, and without benefit to the provincial revenue, or the federal treasury. These strangers bring from their own country all the provisions they need except bait. They fit out their swift sailing schooners in the ports from which they sail and where they not only engage their crews, but even the men they need for taking and preparing the fish. Furnished with nets called trap-nets and other fishing gear of the most improved kind, these fishermen, at a time appointed, swarm into the waters of the Gulf, and in the space of a few days, their boats are loaded with the finest kinds of fish, and this in the presence of our own fishermen who, notwithstanding all their work and the incredible hardships to which they are exposed, cannot obtain the same success. The fishing implements of our Canadian and Acadian fishermen are so primitive and their pecuniary resources so limited, that it will always be impossible for them to compete against the opposition of foreign fishermen.

As for the cod fishery in particular it is almost entirely in the hands of Jersey traders who furnish their own needs, as well as the employees they may require. They only hire the inhabitants of the coast for the roughest and least remunerative work. These are always in debt towards their employers, for they are obliged to accept the wages that are given to them, a sum scarcely sufficient to keep them from dying of hunger. To conclude, the Jersey traders are only engaged in preparing the dry cod from which they realize large profits. All the waste, such as the entrails, liver and tongue, from which the oil is extracted, is thrown into the sea or on the shore where they emit a very disagreeable smell. This waste could be converted to advantage into fish-guano, which is a very rich manure and in great demand among farmers. Thus, on the one hand,

our fine fisheries are, as I have already stated, the prey of craft which are strangers to this province, supplied with large resources, and which expose our poor northern fishermen to a ruinous competition.

The Jersey fishermen rule as masters on the shores of the Gulf, thanks to their capital and their long experience of codfishing, of which they have made a special industry. As for the position of the settlers, or dwellers on the coast, it is of the most precarious, on account of the meagre wages they receive, and the poor market for their produce. The Acadian fisherman certainly deserves more attention than has been bestowed upon him in the past. He is a skilful fisherman, capable of enduring fatigue, hunger and thirst, to a surprising degree. His penurious state has kept him in a kind of bondage from which until now he has not been able to free himself. He has contributed by his incessant work, by self imposed fatigues, and by his skillfulness as a fisherman, to build up the colossal fortunes of those who have made use of him even more completely than they have of the fisheries.

Let us now go on to another branch of industry which, in my eyes, deserves all the solicitude of the government of this province. I mean the fishing or rather I should call it the hunting of seals. What profit is derived from this branch by the fishermen dwelling on the North Shore of the Gulf of St. Lawrence, and others of the province of Quebec? Hardly one seal, out of every twenty killed, is obtained by the Lower Canadian fishermen. Each Spring, in the hunting season, we hear that vessels from America, Nova Scotia and Newfoundland return with full loads of seals taken in Lower-Canadian waters.

Thus in 1884, only ten thousand three hundred and sixty nine seals of all kinds were taken by Lower-Canadian fishermen in the waters belonging to the Province of Quebec, and in 1883, a little over nineteen thousand; whereas fishermen who were strangers to our province have borne away hundred of thousands. This difference is due to the fact that the foreign merchants are much richer, and that they use steamers or other vessels of infinitely better build than those of our fellow-countrymen. Meanwhile there is no more remunerative industry than this one. Seal skins and seal oil find an easy market, and bring good profits to the traders, while the bones are converted into phosphates of great value. With us the debris of the seals are lost, for, as I before observed when speaking of codfish,

the traders of our day desire above all thing to make money, and to make it quickly, heedless of the needs of the future and regardless of the fact that part of the public fortune is being squandered.

It may be well for me to quote, in support of what I have just said the opinion of the Commissioner of Canadian Fisheries expressed in his report of December 31, 1874.

This is what he says :

" The inevitable fate attending excessive pursuit of the *fauna* of forest and flood, threatens speedy extinction of seals in the Gulf of St. Lawrence. While seal hunting on ice was carried on from sailing vessels and by shore-nets, the vicissitudes of the pursuit afforded some natural protection to this animal, and its numbers kept up a flagging pace with the legitimate annual destruction. But the recent employment of steamers has overcome many former difficulties and enables the sealers to pursue their prey with indiscriminate slaughter. These vessels reach the seal-fields either before the cubs are born, and thus disturb the herds and their progeny perish, or arrive while the young ones are yet unable to escape, and the sealers massacre indiscriminately parents and offspring. There were at one time last season engaged in the destructive business, on the Arctic seal-grounds, nearly forty steamers and as many sailing craft from the various European ports ; and so great was the havoc committed that it has excited universal apprehension. About the same time extensive operations by American steamers in the Gulf of St. Lawrence also attracted attention."

Some years ago, New Brunswick and Nova Scotia traders, perceiving the advantages to be derived from this offal of fish, seals, &c., undertook the manufacture of artificial manure. They were completely successful.

In 1884, the total value of fish-guano manufactured in Nova Scotia, amounted to twenty-two thousand, five hundred and fifty five dollars, and in New Brunswick to the sum of forty three thousand, five hundred and seventy-dollars, which is a considerable sum considering the small extent of coast line of the last mentioned province in comparison with that of the Province of Quebec.

It is useless for me to dwell longer on a subject which is perfectly understood. I think that what I have said is sufficient to give

an idea of the importance of our fisheries, of the reforms needed for utilizing the wealth of our seas and of the methods to be adopted for bettering the lot of the dwellers on the Labrador coast.

I will, however, express a hope, viz: that steps will be taken to prevent, during next Spring, marauders from snatching, as it were, from under the very eyes of the law, that wealth which Divine Providence has so lavished on our shores. In my humble opinion, the best means to that end would be to appoint magistrates furnished with the power necessary for the protection of fish, within those limits which are ours by treaty; as well as for the protection of the game and eggs. The magistrates should dwell on the coast and in the neighborhood of those places, where these depredations are most common. We may well conceive that it is impossible that one or two cruisers can be able to keep proper guard over a coast of twelve hundred miles, bounded over an extent of almost three hundred miles by a multitude of islands, forming numerous little harbors, in which the marauders nearly always find a secure retreat. Besides which, the fogs, which are so common on the North Shore, and which we ourselves experienced, often permit them to give our cruisers the slip and flee with their spoil.

A company which would establish, on the Labrador coast, or elsewhere on the North Shore, in districts which might be peopled, concurrently with the salmon, cod, herring, mackerel, seal fisheries, &c., &c., the manufacture of fish-guano, and erect workshops for making the boxes, barrels, &c., necessary for the transport of the products, would greatly contribute to the welfare and prosperity of the settlers in that part of the public domain. The condition of those hardy fishermen could not be worse than it is at present. Every improvement effected on this coast would be an assistance to these poor people, who are isolated from the rest of the world for seven months in the year.

The demands for aid, which have every year been addressed to the government to keep this population from starvation, are the best proofs of what I say.

I think it would be neither dangerous nor adverse to the true interests of this province, to grant to a rich company, capable of competing with the present monopolies, sufficiently extended privileges, for a certain number of years, provided that the government observe

the precautions necessary in such cases. I would propose, for example, that the government be certain before granting such a privilege, that the company which demands such privilege and right of monopoly, is in good faith; that it has the capital and experience requisite for carrying on such an undertaking, in a manner both profitable to itself and to the country at large; that it bind itself to employ, in preference, the fishermen of the coast and other inhabitants of the Province of Quebec who understand fishing, &c., &c.

The Government also could set apart a delay, say of two years, during which time the company would be bound to choose the unoccupied districts on the North shore of Labrador, which they might decide on for trading posts, and to erect the buildings requisite for carrying on its industries, &c., &c.

The inhabitants or settlers on the North shore of the Gulf are not only able and hardy fishermen, but they are also skilful carpenters and joiners, who build their own houses, schooners and fishing boats. They are also intrepid sailors, capable of braving the dangers of the deep. Every Spring, during the months of March and April, these fishermen venture forth in their schooners among the floating ice, with which the sea is covered at that time of the year and until the beginning of May, for the purpose of hunting seals. Unlike the Newfoundland and other fishermen, these brave sailors have no powerful steamers to help them in times of imminent danger. Hardly a year passes but one of these schooners is lost with all on board. All these men would be willing to work for a company which would give them a chance of sharing in the profits and at the same time would supply them with better fishing gear and the means of hunting seals with greater success. A letter which I have at present from Whale-head, on the coast of Labrador, informs me, that the fishing season has been a bad one, and that the dwellers on the coast are awaiting with most gloomy forebodings, the approach of winter. Is there no way of helping such honest people who only ask for work? The Gulf of St. Lawrence offers a vast field to enterprise.

A little encouragement given to those who wish to work our fisheries would certainly make it a productive industry and would also greatly increase our national wealth. Great sums are voted every year for Agriculture. Do not our fisheries, which are worth millions annually, also deserve a share of Crown favours? If the Provincial treasury cannot be called upon to contribute to such a noble

end, there are several indirect ways of helping this deserving part of our population. Among others, the establishing of companies sufficiently powerful to compete with existing ones and to give the poor fishermen a chance of improving their condition, would be a method which would cost the Provincial treasury nothing. I will end these remarks by expressing a hope that the Government, using every discretion, will not reject the proposals made by the company formed by Mr. E. P. Bender, without duly considering the advantages which might accrue from the establishment of such a company to our fishermen on our Northern shores.

In drawing up this report of the exploration authorized by Government, I would fain declare that my only object is the desire of throwing a little light on what is actually taking place on the North Shore, to seriously direct the attention of my fellowcountrymen towards the rich fisheries of the Province of Quebec, and to improve, if it be possible, the lot of the hardy pioneers who have not feared to colonize the most inhospitable part of our country.

The whole nevertheless respectfully submitted.

D. N. SAINT-CYR.

Quebec, October 20th, 1885.

APPENDIX I.

GUANO.

Guano, so called by the Spanish from the Peruvian word *huano*, fertilizer, is an accumulation of excremental matter, deposited by sea-birds, and of a substance, resulting from the decomposition of their bodies and their eggs, mixed with remains of seals, fish, mollusca, crustacea, &c, formed during a long succession of centuries on the islands of Chincha, Lobos, Arica, &c, on the coast of Peru. Long before the discovery of the New World, the inhabitants of Peru looked upon **Guano** as one of the most valuable of fertilizers, and the Incas, the Kings of that country, watched over the preservation of the deposits of this substance with a special care. Very severe laws protected the birds which frequented the **Guano** islands. Who-soever put his foot on those islands during laying time, or killed those birds, at any time of the year, was punished with death.

At the time of the discovery of Peru by the Spaniards, the latter, deceived by the appearance of those islands, whose hills were covered with saline incrustations, gave them the name of Sierra Nevada, or mountains of snow.

Two conditions are essential to the production and preserving of **Guano**: a dry climate, where it hardly ever rains, and an ocean whose waters teem with fish; conditions which are met with on certain points of the Bolivian and Peruvian coasts. The **Penguins** (*Alca*, L.), **Gannets** (*Sula*, Briss.), **Divers** (*Olymbus*, L.), **Cranes** (*Grus*, L.), **Cormorants** (*Phalacrocorax*, Briss.), **Flamingos** (*Phoenicopterus*, L.), and other ichthyophagous birds, find abundant food there, whilst their excrements, thanks to the dryness of the temperature, retain most valuable soluble elements. However, Peruvian **Guano** is not altogether excremental or entirely the product of birds. These islands are not only the places of *rendez-vous* of sea birds who lay eggs and die on them, but also the last resting place of many other marine animals, such as seals and sea lions, &c., which often frequent **Guano** lands and islands, and add considerably to the deposits both during their lives and after their death.

Although the writings of navigators of the 17th and 18th centuries, make mention of this fertilizer, it is to Mr. de Humboldt that

the merit is due for having been the first to call the attention of Europe to that useful product. In 1804, this illustrious *savant* brought a specimen of **Guano** from the Chincha Islands, which specimen he had analyzed by Fourcroy, Vauquelin and Klaproth. These chemists, after a careful analysis, unanimously decided that the specimen submitted was a fertilizer which contained the richest fertilizing principles hitherto known, and recommended its instant use for agricultural purposes. They pronounced **Guano** to be one of the most powerful of fertilizers. What causes its superiority over animal manures, is that it not only contains a strong proportion of nitrogen and salts of ammonia, but it also contains a large quantity of earthy phosphate and alkaline salts, that is to say, all the principles necessary for the development of plants. De Humboldt gave a detailed and exact description of these deposits. He declared that this manure had accumulated to a thickness of fifty and sixty feet on granite rocks. He remarked that the accumulations which were formed there for three hundred years, did not exceed a fraction of an inch. The **Guano** remained almost intact until 1840, when Liebig published his work on chemistry, in connection with agriculture, and demonstrated the importance of artificial fertilizers. The result of Liebig's researches caused a sensation amongst the agricultural public. In 1840, some Lima merchants exported a cargo of **Guano** to England. But it was not really until two years later that **Guano** was employed to any extent for agricultural purposes.

The use of **Guano**, soon became so general, that twenty years later, in 1862, the importation of this fertilizer was computed at four hundred and thirty five thousand tons, at the price of from fifty to sixty five dollars a ton, for the best qualities. During thirty years almost all the **Guano** exported into Europe came from the Chincha islands. When these deposits, which contained more than seven millions of tons, were practically exhausted, for hardly one hundred and fifty thousand tons remained, in 1872, its removal was prohibited, except for use in Peru. **Guano** is also exported from several other countries. It is obtained from the isles of the Pacific Ocean, from Bolivia, the West coast of Africa, the West Indies, Brazil, &c., &c.

I have never heard that it has been exported from Labrador, in quantities worth mentioning; nevertheless this **Guano**, if I may so call the rich deposit of humus found on some of the islands on the North Shore of the Gulf of Saint Lawrence, is not altogether worthless although the frequent rains and frost have deprived it of its nitrogen, ammonia, &c., &c.

What we call **Fish Guano** is especially made with the debris of codfish and seals in the Newfoundland and Norwegian fisheries. This **Guano** is very rich in nitrogen and in phosphate. But its oily nature renders its action as a fertilizer both slow and uncertain. The only place where I noticed a mould rich in fertilizing principles was the *Mingan Islands*, where the birds are in very large numbers. **Labrador Guano** appears to rank in the same category with that of Patagonia and Ichaboë, near the South-West coast of Africa. That of Patagonia gives the following percentage :

Ammonia.....	2.54
Phosphate.....	44.60

and that of Ichaboë :

Ammonia.....	7.30
Phosphate.....	30.30

Moreover, our stay in Labrador was not sufficiently extended to allow of my entering into further details. Before leaving this subject, I would like to add a few words, which may be of some service, when other explorations are made, with regard to the supposed **Guano** of the Gulf of St. Lawrence.

The fortunes which many made out of the deposits of this valuable fertilizers, stimulated explorers to make fresh researches in different parts of the Globe. In 1855, these researches led to the discovery of new deposits of animal matter of the same nature as **Guano**, on some of the islands situated on the coast of Guiana and Venezuela. These islands are the resort of innumerable flocks of sea-birds who lay their eggs there. But as these islands are situated in the region of tropical rains, these accumulations of excrement and of organic matter, undergo chemical changes whence result products quite different from the earthy **Guano** of the arid islands on the Peruvian and Bolivian coasts. Amongst these islands, there are some which are low and covered with a sand formed of little fragments of coral, madrepora, and shells, in which sand the birds make their nests. There are others again, which rise in the form of a peak, to the height of eight hundred feet, and on which rocky beds of metamorphic **Guano** are found covered over by more recent deposits. With regard to formation, these deposits are of several sorts. One is arenaceous, composed of fragments the size

of mustard seeds, almost white in colour, when it is dried, and giving no odour of ammonia, but that of newly tilled earth. This Guano contains per cent :

Water.....	4.40
Organic matters.....	6.40
Bone phosphate.....	46.60
Carbonate of lime.....	39.80
Phosphate of magnesia.....	1.20
Sulphate of lime.....	0.80
Sand.....	0.21

Also traces of chloride and of sulphate of soda ; in all ; 94.41 per cent. Ammonia does not exceed two per cent of the total.

Another sort consists of agglomerated grains, which is the first degree of transition from the state of sand to that of rock. Its composition differs somewhat from the preceding one, by a diminution of the carbonate of lime and an increase of bone phosphate.

Finally, a third sort, consisting of a solid rock, forming a crust which attains two feet in thickness. This hard crust, the result of changes wrought on the surface of the mass by the torrential rains of the tropics, covers the lower layers of the deposits. Here, again, the carbonate of lime has been decomposed by the acids proceeding from the fermentation produced by the humidity which always prevails at a high temperature, and has been carried away by the rains with the other soluble matters. This Guano greatly resembles phosphate of lime of the crystalline formations and offers, at the same time, a remarkable example of the conversion of modern deposits of organic matters into what appears to be a rock of ancient formation. But although this rock consists of fish bones, of substances which fish feed upon, of fragment of shells, of carcasses of birds and of eggs, it is none the less true that all trace of animal life has also as completely disappeared from the hard beds of Guano, as it has from truly metamorphic rocks, whose changes we, as a rule, ascribe to an intense heat caused by the pressure of superposed mountains, and continued during long periods of time.

Here, however, by the sole heat of the sun recent deposits are thus metamorphosed in crystalline masses under the slow but continued influences of chemical changes wrought by the heat and humidity of the tropics.

What has been said above should suffice to give an idea of the composition and the formation of **Guano** proper.

The islands which we explored in quest of this valuable fertilizer, only contain a black earth, rich and light, in which certain sea birds make their nests, and whither they resort in such numbers that some islands are almost covered with them. Without a doubt, were it not for the frequent rains and the melting of snow accumulated during the long and rigorous winter of the North Shore of the Gulf of St. Lawrence, the **Guano** deposits would have acquired a certain value.

But as I only visited the islands of the archipelago of Mingan, and that of Grand Mecatina, it is impossible for me to form a better opinion on the subject. **Guano** may or may not exist in paying quantities on the coast, or on the islands of Labrador. A careful and complete exploration of those localities frequented by sea-birds, seals, &c., would be the only way of answering this question in a satisfactory manner.

APPENDIX II.

EIDER-DOWN.

A feather consists of three parts, viz: a semi-transparent horny tube, possessing lightness and strength to a high degree, by which it is attached to the skin; a shaft composed of an exterior coating firm and horny, inclosing a soft, spongy and elastic substance; and a vane consisting of barbs and barbules. The barbs are attached to the two sides of the shaft, and the barbules are on each side of the barbs. When these last are long and waving they are called plumes: such are the ostrich plumes which, considered from a commercial point of view, are the most valuable. Feathers are always preceded by down, which constitutes the first covering of young birds. There are feathers for ornament, such as those of the ostrich, heron, pheasant, bird of paradise, peacock, &c. There are others which are used as articles of clothing, as the skins of swans, large penguins, &c., &c., suitably prepared, out of which muffs, coat linings and different other articles are made. The skins and feathers of the following: **Penguins**, (*Alca*, L.), **Puffins** (*Puffinus*, Bris.), **Grebes** (*Podiceps*, Latham.), &c., are used as apparel, on account of their beauty of colour and the fineness and density of their plumage. Different articles of apparel are made of them, such as tippets, boas, pelerines, wrist-bands, muffs and other articles which are worn in winter. The natives of the Arctic regions make themselves garments of these bird skins which they wear with the feathers inside.

The lower barbs of the feathers are generally loose; they constitute the down. The quantity of down is not always the same. It varies according to the kind of bird, and also according to the part of the body of the bird itself. Aquatic birds are those which supply the most. And as the value of bed-feathers depends above all on the quantity of down they supply, the feathers of ducks, swans, geese, &c., whose accessory feathers, or down, are as large as the feathers themselves, are the most valued. Softness, elasticity, lightness and heat, qualities which are sought for in a feather bed, are found in goose feathers. I would further add, that feathers plucked from the bird whilst living are considered the best. I have seen somewhere, that this barbarous operation is repeated three or four times during the year. The young birds as well as the old ones are plucked. It is supposed, that this operation performed in good time, favours the

growth of feathers. The less esteemed feathers, which are obtained from turkeys, ducks, fowls, are also used for stuffing feather beds.

After these several remarks, let us pass on to the softest and most sought after all, **Eiderdown**

The bird which furnishes this precious down is the **Eider-Duck** (*Anas mollissima*, L.) This down is very expensive. It is collected in the nest of the **Eider-Duck**. This bird strips the down from its breast, to cover its eggs, and thus prepares a warm nest for its little ones after they are hatched.

The **Eider-Duck** builds its nest in great numbers together on the coasts of Norway, Scotland, the Faroe Islands, Iceland, Greenland, Newfoundland, Labrador, &c., &c. The hunters expose themselves to the greatest dangers in order to secure this down. For it often happens, that the **Eider-Duck** wishing to save its progeny from the rapacity of the spoilers, builds its nest on steep, almost inaccessible rocks. It is in such countries as Norway, Iceland and Greenland, that man, less indifferent about his future needs, has learned to take advantage of the habits of this bird which is assuredly one of the most useful we know. In these countries the **Eider-Duck** prefers to build its nest on the small flat islands bordering the shores of the mainland, where it is safe from the incursions of marauders. These islands on which the **Eider-Duck** builds its nests and lays its eggs, have become the property of the inhabitants of the coast. There are many of them which for centuries have descended from father to son, and thanks to the revenue which these birds give them, these families are considered the most opulent of the country. It is easy to understand the care taken of these birds by the proprietors of these nests. The laws which protect them are of the most severe. Whoever kills an **Eider Duck** is liable to a fine of thirty dollars, and the theft of an egg or of down is rigorously punished. Procuring down is most easy, for these birds, being accustomed to receive good treatment, are by no means wild.

The female first lays five or six eggs, which she covers with a thick covering of down in the nest, which is equally provided. The person who procures the eider down commences by carefully lifting the bird from off its nest, and placing it gently by the side of it. He then removes the eggs and the down and replaces the female in the nest. The bird lays again, this time only three or four eggs. It strips its breast of the down that remains to cover them again.

But once again its nest is pillaged. It has exhausted its supply of down, but its reproducing instinct always subsists. It utters plaintive cries to call its companion to its aid. He readily accedes to the wish of his mate. He also strips the soft feathers from his breast to line the nest where his mate is going to lay for the last time. If this be also taken away, the pair abandon the nest for ever. I may say to the praise of the inhabitants of these countries, that far from acting in such a manner as to deprive themselves of a revenue which assures them comparative comfort, they do all in their power to guard the birds in their respective localities and adopt every means to induce them to remain.

And as the down from the male is of a paler colour than that from the female, a fact well known by the owners of the nests, the latter leave untouched the eggs and the down which covers them in the nest, and thus allow the Eider-Ducks to breed.

The Eider-Duck is a wild and solitary bird which explains why it prefers islands and rocks jutting out into the sea. It is an excellent diver and this is due to its feet being set very far back. It seeks most of its food under water.

The female lays five or six eggs of a pale green colour and two broods are generally hatched every year.

The following is the list of the birds which frequent the coast and the islands of the River and Gulf of St. Lawrence, but especially the coast and islands of Labrador. The small book, "Canadian Birds," "*Les Oiseaux du Canada*," by Mr. C. E. Dionne, curator of the Zoological Museum of the Laval University, has been of great help to me, in finding the names of the different birds which compose this list. I also owe my most sincere thanks to Mr. Dionne for his judicious advice touching the completing of this list. —

I.—ORDER.—BIRDS OF PREY. (*Raptores*, Vigors.)

FALCONS. (*Falconidae*, Vigors.)

The WHITE-HEAD EAGLE. (*Haliaetus leucocephalus*, Sav.)

The GOLDEN EAGLE. (*Aquila chrysaetos*, Cuvier.)

The FISHER EAGLE. The Ospray. (*Pandion haliaetus*, Sav.)

The GERFALCON. (*Falco islandicus*, Sabine.)

- The DUCK-HAWK. (*Falco peregrinus*, Wilson.)
 The PIGEON-HAWK. (*Falco columbarius*, Linn.,
 The SPARROW-HAWK. (*Falco tinnunculus*, Vieillot.)
 The ROUGH-LEGGED BUZZARD. (*Archibuteo lagopus*, Linn)
 The NORTHERN BUZZARD. (*Buteo borealis*, Cuvier.)
 The GOSHAWK. (*Astur atricapillus*, Bp.)
 The BUZZARD. (*Circus cyaneus*, Lac.)

OWLS. (*Strigidae*, Vigors.)

- The SNOWY OWL. Harfang. (*Nyctea nivea*, (Gray.)
 The HORNED OWL. (*Bubo arcticus*, Sw.)
 The GRAY OWL. (*Surnium cinereum*, Aud)
 The BARRED OWL. (*Surnium nebulosum*, Gr.)
 The COMMON OWL. (*Otus vulgaris*, Flem.)
 The SHORT-EARED OWL. (*Strix brachyotus*, Linn.)
 The HAWK-OWL. (*Surnia ulula*, Bp.)
 The SAW-WHET OWL. (*Nyctale albifrons*, Cass.)

II.—ORDER.—PASSERINES. (*Incessores*, Vigors.)

- The ROBIN. The THRUSH. (*Turdus migratorius*, Linn.)
 The WOOD THRUSH. (La Flute.) (*Turdus mustelinus*, Gm.)
 The OLIVE-BACKED THRUSH. (*Turdus Swainsonii*, Cab.)
 The CAT-BIRD. (*Mimus carolinensis*, Gray.)
 The RUBY-CROWNED KINGLET. (*Regulus calendula*, Licht.)
 The GOLDEN-CRESTED KINGLET. (*Regulus strapa*, Licht.)
 The BLACK-CAPPED TOM-TIT or CHICKADEE. (*Parus atricapillus*,
 Linn.)
 The HUDSONIAN CHICKADEE or TOM-TIT. (*Parus hudsonicus*,
 Forst.)

- The RED-BELLIED NUTHATCH. (*Sitta canadensis*, Linn.)
 The SUMMER WARBLER. (*Dendroeca aestiva*, Bd.)
 The HORNED LARK. (*Eremophila cornuta*, Boie.)
 The BLACK-BREASTED WARBLER. (*Dendroeca virens*, Baird.)
 The BLACK-POLL WARBLER. (*Dendroeca striata*, Baird.)
 The BLACKBURNIAN WARBLER. (*Dendroeca Blackburniae*, Bd.)
 The BLACK and YELLOW WARBLER. (*Dendroeca maculosa*, Bd.)
 The GOLDEN-CROWNED THRUSH. (*Seiurus aurocapillus*, Sw.)
 The MARYLAND YELLOW-THROAT. (*Geothlypis trichas*, Cab.)
 The BANK SWALLOW. (*Hirundo riparia*, Linn.)
 The WHITE-BELLIED SWALLOW. (*Hirundo bicolor*, Vieil.)
 The RED-EYED VIREO. (*Vireo olivaceus*, Vieil.)
 The SHRIKE. (*Lanius borealis*, Aud.)
 The PINE GROSBEEK. (*Pinicola canadensis*, Cab.)
 The PURPLE FINCH. (*Carpodacus purpureus*, Gr.)
 The WHITE-WINGED CROSSBILL. (*Loxia leucoptera*, Aud.)
 The COMMON CROSSBILL. (*Loxia americana*, Aud.)
 The REDPOLL LINNET. (*Aegolus linaria*, Cab.)
 The GOLD-FINCH. (*Chrysomitris tristis*, Bp.)
 The SNOW-BIRD. (*Junco hiemalis*, Scl.)
 The SNOW-BUNTING. (*Plectrophanes nivalis*, Meyer.)
 The CHIPPING SPARROW. (*Spizella socialis*, Bp.)
 The WHITE-THROATED SPARROW. (*Zonotrichia albicollis*, Bp.)
 The WHITE-CROWNED SPARROW. (*Zonotrichia leucophrys*, Sw.)
 The SONG SPARROW. THE NIGHTINGALE (*Melospiza melodia*,
 Baird.)
 The FOX SPARROW. (*Passerella iliaca*, Sw.)
 The RUSTY GRACKLE. (*Scolecophagus ferrugineus*, Sw.)

THE PURPLE GRACKLE. (*Quiscalus versicolor*, Vicillot.)

THE RAVEN. (*Corvus corax*, Linn.)

THE CROW. (*Corvus americanus*, Aud.)

THE BLUE JAY. (*Cyanurus cristatus*, Sw.)

THE CANADA JAY. (*Perisoreus canadensis*, Bp.)

THE BEE MARTIN. (*Tyrannus carolinensis*, Bp.)

THE KINGFISHER. (*Alcedo alcyon*, Linn.)

THE CHIMNEY SWIFT. (*Chaetura pelagica*, Steph.)

III.—ORDER.—CLIMBERS. (*Scansores*, Vigors.)

THE HAIRY WOODPECKER. (*Picus villosus*, Linn.)

THE DOWNY WOODPECKER. (*Picus pubescens*, Linn.)

THE THREE-CLAWED WOODPECKER. (*Picus trydactylus*, Bp.)

THE GOLDEN-WINGED WOODPECKER. (*Colaptes auratus*, Sw.)

IV.—ORDER.—GALLINACEANS OR COURSERS

(*Rasores*, Vigors.)

THE SPRUCE GROUSE. (*Tetrus canadensis*, Linn.)

THE RUFFED GROUSE. (*Bonasa umbellus*, Steph.)

THE WILLOW PTARMIGAN. (*Lagopus rupestris*, Leach.)

THE WILLOW PTARMIGAN. { *Lagopus albus*, Linn. vel.
 Lagopus saliceti, Leach.

V.—ORDER.—WADERS. (*Grallatores*, Vigors.)

THE GOLDEN PLOVER. (*Charadrius plumalis*) Wilson.)

THE SEMI-PALMATED PLOVER. (*Ægialitis semi-palmatus*, Cab.)

THE OYSTER-CATCHER. (*Haematopus palliatus*, Temm.)

THE TURNSTONE. (*Streptilas interpres*, Illig.)

THE NORTHERN PHALAROPE. (*Lobipes hyperboreus*, Cuv.)

WILSON'S SNIPE. (*Gallinago Wilsonii*, Bp.)

- WILSON'S RED SHANK. (*Tringa Wilsonii*, Nutt.)
 The SANDERLING. (*Tringa arenaria*, Linn.)
 The BARKING SAND-PIPER. (*Totanus melanoleucus*, Gm.)
 The YELLOW SHANKS. (*Totanus fluviipes*, Gm.)
 The SPOTTED SAND-PIPER. (*Tringoides macularius*, Gr.)
 The SOLITARY SAND-PIPER. (*Rhyacophilus solitarius*, Bp.)
 The HUDSONIAN CURLEW. (*Numenius hudsonicus*, Latham.)
 The ESQUIMAUX CURLEW. (*Numenius borealis*, Latham.)
 The NIGHT HERON. (*Nyctiardea gardeni*, Baird.)
 The COMMON BITTERN. (*Botaurus lentiginosus*, Steph.)
 The GREAT BLUE HERON. (*Ardea herodias*, Linn.)
 The CAROLINA RAIL. (*Porzana carolina*, Vieil.)
 The COOT. (*Fulca americana*, Gm.)

VI.—ORDER.—WEB-FOOTED. (*Natatores*, Vigors.)

- The SKUA-GULL. (*Stercorarius catarractes*, Temm.)
 The POMARINE SKUA. (*Stercorarius pomarinus*, Temm.)
 BUFFON'S GULL. (*Stercorarius Buffoni*, Coues.)
 The BLACK-BACKED GULL. (*Larus marinus*, Linn.)
 The HERRING GULL. (*Larus argentatus*, Brunn.)
 The BLUE-BACKED GULL. (*Larus glaucus*, Brunn.)
 The WHITE GULL. (*Larus eburneus*, Gm.)
 The THREE-CLAWED GULL. (*Larus tridactylus*, Linn.)
 BONAPARTE'S GULL. (*Larus Bonapartei*, Nutt.)
 The COMMON TERN. (*Sterna arctica*, Temmk.)
 The SOOTY TERN. (*Sterna fuliginosa*, Gm.)
 The SCISSOR-BILL. (*Rhyncops nigra*, Linn.)
 The YELLOW-BEAKED ALBATROS. (*Diomedea chlororhynchus*, Gm.)

- LEACH'S PETREL. (*Thalassidroma Leachii*, Temm.)
- The PETREL (Le Fulmar). (*Procellaria glaucis*, Temm.)
- The BLACK-TAILED PUFFIN. (*Puffinus fuliginosus*, Strickl.)
- The AMERICAN SWAN. (*Cygnus americanus*, Sharp.)
- The WILD GOOSE. The Northern Goose. (*Anser hyperboreus*, Pall.)
- The COMMON BRANT-GOOSE. (*Bernicla brenta*, Steph.)
- The CANADIAN BRANT-GOOSE. (*Bernicla canadensis*, Boie.)
- The COMMON DUCK. (*Anas boschas*, Linn.)
- The BLACK DUCK. (*Anas obscura*, Gm.)
- The PIN-TAIL. (*Dafila acuta*, Jenyns.)
- The WOOD OR SUMMER DUCK. (*Anas sponsa*, Linn.)
- The AMERICAN WIDGEON. (*Mareca americana*, Steph.)
- The GRAY DUCK. (*Chaulelasmus streperus*, Gr.)
- The GREEN-WINGED TEAL. (*Querquedula carolinensis*, Gm.)
- The BLUE-WINGED TEAL. (*Querquedula discors*, Steph.)
- The SPOONBILL DUCK. (*Spatula clypeata*, Boie)
- The BLACK-HEADED DUCK. (*Fuligula marila*, Steph.)
- The RED-HEADED DUCK. (*Fuligula ferina*, Steph.)
- The GOLDEN-EYED DUCK. (*Bucephala clangula*, Gr.)
- The ICELAND DUCK. *Bucephala islandica*, Bd.)
- The BUFFLE-HEAD DUCK. (*Lucephala albeola*, Baird.)
- The NEWFOUNDLAND DUCK. (*Harelda glacialis*, Leach.)
- The HARLEQUIN DUCK. (*Histrionicus torquatus*, Bp.)
- The ORDINARY EIDER-DUCK. (*Somateria mollissima*, Leach.)
- The EIDER. (*Somateria spectabilis*, Leach.)
- The AMERICAN WIDGEON. (*Edemia americana*, Sw.)
- The TUFTED WIDGEON. *Edemia fusca*, Sw.)

- The LARGE-BEAKED WIDGEON. (*Aedemia perspecillata*, Flem.)
 The SHELDRAKE. (*Mergus merganser*, Linn.)
 The RED-BREASTED SHELDRAKE. (*Mergus serrator*, L.)
 The SMALL-SHELDRAKE. (*Mergus cucullatus*, Linn.)
 The LOON. (*Colymbus torquatus*, Brunn.)
 The RED-THROATED DIVER. (*Podiceps griseigena*, Gr.)
 The PIED-BILLED GREBE. (*Podilymbus podiceps*, Lawr.)
 The GREAT AUK. Species extinct. (*Alca impennis*, Linn.)
 The RAZOR-BILLED AUK. (*Alca torda*, Linn.)
 The SEA-PARROT. (*Fratercula Artica*, Steph.)
 The LARGE-BILLED PUFFIN. (*Fratercula glacialis*, Coues.)
 The CRESTED PUFFIN. (*Fratercula cirrhata*, Bp.)
 The SMALL SEA-PARROT. (*Phaleris psittacula*, Temm.)
 The SMALL AUK. (*Uria pusilla*, Pallas.)
 The SMALL GUILLEMOT. (*Mergulus Alle*, Vieil.)
 The SEA-PIGEON. (*Uria grylle*, Brunn.)
 The COMMON GUILLEMOT. (*Uria ringvia*, Brunn.)
 The LARGE-BILLED GUILLEMOT. (*Uria Brunnichii*, Ridg.)
 The BOOBY OR GANNET. (*Sula bassana*, Linn.)
 The COMMON CORMORANT. (*Phalacrocorax carbo*, Cuv.)
 The FRIGATE-BIRD. (*Tachypetes aquilus*, Vieil.)

APPENDIX III.

The Pinniped Mammalia of the River and Gulf of St. Lawrence.

Linnaeus in the *Phoca* genus, included all marine animals known as Seals, (*Phoca*, Cuv.) and (*Walruses*, Linn.)

Cuvier had formed these animals into a group which he called Amphibia, which were wrongly so called, and which name was rejected after deeper studies on the subject, and replaced by the name Pinniped (finfooted) given by Lesson. In fact these mammalia are characterized by short webbed feet, which only enable them to crawl on the ground. The Pinnipeds spend most of their life in the water. Their webbed feet act as fins; the dorsal spine is very flexible and is furnished with muscles which bend it with strength. Their narrow pelvis, smooth hair and tight skin, in fact their whole structure, is most perfectly adapted to an aquatic life. There are two genera of this animal in our seas which are distinguished by their shape and teeth, and by other generic characteristics. Their bodies are shaped somewhat like fish, whilst their limbs, which are short and covered with the common tegument, serve as fins. These, which are joined to one another by a membrane, are each composed of five digits or toes, with non-retractile claws. The digits of the flippers diminish from the big one to the small one, but, with regard to the feet, the big toe and the small toe are the longest, and the intermediate toes are the shortest. And again, the flippers are covered with the skin of the body as far as the wrist and the feet are covered only as far as the heel; between them is a short and rudimental tail. The head somewhat resembles that of a dog. The eye is large, and the external ear, when it exists, is very small. Their nostrils are furnished with valves, which close when the animal dives. There are whiskers on the upper lip. The internal organization exactly resembles that of carnivorous land mammalia. Breathing in the air is indispensable for them. They are able however to remain a considerable time under water, before coming to the surface to breathe. This faculty is due to the presence of a large sinus in the liver, which serves as a reservoir for the blood, when the interruption of breathing stops the circulation. They are warm-blooded and live in the sea. They appear however to be able to exist in fresh water without suffering from it. Some have even been found in Montreal harbour.

SEALS have also been killed or seen in the rivers of Ste. Anne de la Pérade, Batiscan, St. Maurice, Richelieu, and in the river St. Lawrence as far as Montreal and beyond. This was an old haunt, doubt-

less, for the skeleton of the seal (*Phoca groenlandica*, Muller) in a fossil state, was found in the suburb of Ste. Marie of Montreal; a species of seal which at the present day exists in large numbers at the estuary of the river St. Lawrence.

The PINNIPEDS differ from the cetaceans by the absence of the large and horizontal tail of the latter, by the presence of four feet shaped like a fin, by their skin which is covered with hair, and by their dental formula, &c. Although these animals are sometimes met with in warm climates, they usually dwell in the temperate and glacial zones. Seal-hunting or fishing is an important commercial industry, both as regards oil and skins, which are in great demand in the markets of Europe and Asia. The number of SEALS and WALRUSES killed annually in our seas is computed at about a million. In 1881, the Esquimaux Point settlers killed over twenty-four thousand, valued at from four to five dollars a piece.

The PINNIPEDS are carnivorous animals and are constitutionally adapted to an aquatic life. Their bodies instead of being smooth, like those of cetaceans, are covered with hair, and with some the hair is two-fold, for below the coarse exterior hair, a soft and thick fur is found.

The PINNIPEDS have a very developed brain. They are easily domesticated and have a certain amount of intelligence. They are sociable, very fond of their young, and although naturally timid, they are said to defend them with great courage. They are great eaters, devouring an almost incredible quantity of crustacea, molluscs, fish, and even preying on sea birds. The WALRUS and OTARIES are polygamous; the male is much larger than the female. Amongst those SEALS, which are monogamous, there is less difference in size between the two sexes. These animals are fuller blooded in proportion than the land mammalia. They are not mute like cetaceans; they all have voices. There are some, for instance the WALRUS and the SEA ELEPHANT, which utter veritable roars, others bark, and utter more or less sonorous cries.

Owing to the decrease of the large cetaceans, the hunting and fishing of the PINNIPEDS has become very important. I use the words *fishing* and *hunting*, for they may both be equally applied to this pursuit, which is sometimes carried on in the water, on the ice, and on *terra firma*.

These animals may be classed in three groups or families easily distinguishable by their outward appearance.

They are the MORSE or WALRUS (*Odoboenidae*), the OTARIES (*Otariidae*) and the SEALS (*Phocidae*).

I. FAMILY—WALRUSES (*Odoboenidae*, Allen).

Synonyms :—*Trichecidae*, Gray.
Trichechidae, Gray.
Rosmaridae, Gill.
Broca, Latreille.
The Morse, F. Cuv.

WALRUSES have no external ears, are heavy and massive in shape. Like all OTARIES, they can turn their feet forward, which, in addition to their having a freer movement of their flippers than the SEALS, enables them to move fairly well on land.

WALRUSES differ still more from seals in their feet which, in the latter, stretch straight behind and cannot be bent forward like those of the WALRUSES and consequently are of no use for moving about on land.

These mammalia of the Arctic seas greatly resemble the larger kinds of seals in the general shape of the body and by the manner in which the limbs are disposed, but they differ from them with regard to the head and teeth. The cranium, although heavy, is not very large, but its muscular swelling is very apparent. The facial portion of the head is longer than that of the seal, whilst the front part of the upper jaw is very much developed, to receive the canine teeth between which closes the lower jaw which has no canine teeth or incisors when the animal is full grown. The young WALRUSES have six incisors in each jaw, which drop out as the animal grows, with the exception of two, which remain between the canine teeth in the upper jaw, and which resemble molars. The upper canine teeth are very long, they are turned downwards in the shape of pointed tusks and descend much lower than the chin. The grinders which in youth are $\frac{5}{1}$, fall out as the animal advances in age. These teeth are conical at the crown, blunt, single and worn obliquely at the summit.

The following is the dental formula of adult WALRUSES; incisor $\frac{2}{3}$; canine $\frac{11}{0}$; molar $\frac{44}{1}$. As may be seen by this formula, the teeth

of WALRUSES greatly differ from those of SEALS. Their lower jaw wants incisors and canine teeth, whereas in their upper jaw, these last form enormous tusks which sometimes attain the length of two feet, between which are two incisors similar to grinders. The upper jaw is remarkable for the size of the sockets in which the tusks are fixed, which gives this animal so swollen a muzzle that the nostrils, instead of terminating the snout, are almost turned upwards. Only a single species of WALRUS is known.

Genus.—*Odobaeus*, Linn.

Synonyms :—*Trichechus*, Linn.

Rosmarus, Klein.

Phoca, Linn.

The generic name *Odobaeus* seems to be more generally employed at present. It is derived from the Greek words : *odos* entrance, *baino* I walk ; which indicates its power of walking on land ; while *Trichechus* comes from *thrix* hair, *ichthus* fish, *quia solus inter pisces fere hirsutus sit* says Artedi who classes the WALRUS as a fish.

The generic name *Trichechus* so frequently used to designate the WALRUS was not originally used in that sense but appears to have been invented to designate the *Sirenia*, and especially the *Lamantin* whose hide is covered with scattered hairs.

The MORSE or SEA-COW, (*Odobaeus rosmarus*, Malmgren.)

Synonyms :—*Trichechus rosmarus*, Linn.

Trichechus longidens, Frémery.

Rosmarus arcticus, Lilljeborg.

Rosmarus obesus, Gill.

Vache-marine, Bufon, Brisson.

Sea-cow, Shulldham.

The MORSE of the Atlantic Ocean ; the *Sea-cow*, *Sea-horse* of the English and *Vache marine*, *Cheval marin*, *Bête à la grande dent* of the French.

At the present day all walruses are considered as belonging to a single circumpolar species.

This singular animal is from eleven to fourteen feet in length. Its fur is very short, thick and reddish ; it has a swollen muzzle. Its large tusks which are often from one and a half to two feet in length are the most remarkable feature of the WALRUS. These tusks aid the massive animals in climbing up on the rocks and ice floes from which they are never far away, and also in digging out certain mollusks, which form their chief food, out of the mud and sand where they are buried. The WALRUS appears to have been formerly very common in the lower end of the River and Gulf of St. Lawrence, but to-day, although it is still sometimes met with on the coast of Labrador, it no longer frequents any except the northern seas. It appears that it ascended the River Saint Lawrence within the memory of man, up to as far as River Ouelle. It is rarely solitary ; it is gregarious, and is sometimes found in the water, but oftener basking in the sun, on the shore or on the ice. Its naturally hard skin is tanned ; it furnishes a thick and very strong leather which was used in old times for gig-traces. It is still used for the same object, but chiefly for the main-braces of coaches. A great deal of oil of an excellent quality is obtained from this animal. WALRUS hunting was formerly very lucrative in the Gulf of St. Lawrence ; they were found on the shore in Summer, and in Winter on the ice floes. They used to be commonly found basking in the sun and breathing at their ease on the sandy beaches of the Magdalen Islands. But first the French, then the English and Americans, waged so bitter a war against them, that at the commencement of this present century they were almost totally destroyed, the result being that these mammalia are very seldom met with at the present day, not only in the lower part of the River but also in the Gulf of St. Lawrence. They are now hardly ever met with, except towards the Labrador coast, in the Straits and Hudson's Bay, where their inaccessibility is their sole protection. They are still met with very but rarely at the Magdalen Islands and in the Straits of Belle-Isle. The tusks are often found buried in the sand of the shores of the River and Gulf of St. Lawrence in a state of perfect preservation. These are the last remains of animals which hardly two centuries ago lived in the immense estuary of the St. Lawrence, and whose spoils have helped to build up many fortunes. But the indifference and want of foresight of Governments and the cupidity of traders, have caused the total disappearance of this source of national wealth from our waters. It is only their innumerable multitude and their fecundity which has saved seals from a similar destruction.

II. FAMILY—OTARIES, Gervais (*Otariidae*, Gill).

Synonyms :—*Eared Seals*, Buffon.

Otaria, Péron.

OTARIES have for a general character small external ears, relatively slim and elongated in shape ; the neck much longer than that of a SEAL. The flippers are situated farther back than with the latter. Their feet, unlike the former, can move forward and are therefore useful in walking on land.

It was only after more careful observations and deeper studies, that OTARIES were distinguished from SEALS. However, the English and American fishermen still, for the most part, include them under the collective name of SEALS, at the same time distinguishing them as EARLESS SEALS and EARED SEALS.

OTARIES are distinguished by their clawless flippers which are placed further back than those of other SEALS, and this, as a consequence, enables them to swim better. This peculiarity gives them the appearance of having a longer neck. The membrane which covers the feet extends beyond the claws, in long strips or flaps.

The nether surface of their limbs is not covered with hair like the rest of the body. These animals are provided with small exterior ears, hence their name of OTARIES. The OTARIES have six upper incisors, of which the four intermediate ones are double cutting ones ; and four lower incisors, all forked.

This family includes the three following genera :—

I. GENUS—EUMETOPIAS, Gill.

Synonyms :—*Otaria* of various authors (in part).

Arctocephalus, Gray (in part).

There is only one species of this Genus :—

The SEA-LION, Buffon—*Eumetopias*, Stelleri, Gray.

Synonyms :—*Leo marinus*, Steller.

Otaria Stellei, Lesson.

Arctocephalus Californianus, Gray.

The *Leonine Seal*, Pennant.

The *Sea King*, Elliott.

The *Sea lion*, the *Hair Seal* of the English.

The *Lion marin* of the French.

It is a denizen of the shores of the Northern Pacific Ocean from Behring's Straits to the coasts of California and Japan, on the South.

The length of the adult male is from 11 to 13 feet ; it weighs from 1,000 to 1,300 pounds. The length of the female barely exceeds eight feet, and its weight is from four to five hundred pounds. The colour varies according to the age of the animal and the season.

The SEA-LION is the largest of the OTARIES. It has no mane like the land lion.

II. GENUS—ZALOPHUS, Gill.

Synonyms :—*Arctocephalus*, Gray (in part).

Neophoca, Gray.

This GENUS appears restricted to the shores of the Northern Pacific Ocean and the Australian seas.

Only the following species is known :—

The CALIFORNIAN SEA-LION, Choris (*Zalophus Californianus*, Allen).

Synonyms :—*Otaria Californiana*, Lesson.

Phoca Californiana, Fischer.

Zalophus Gillespii, Fischer.

The *Sea-lion* (of California) Scammon.

The LOBO MARINO of the Spaniards. It is found on the coast of California. The colour of this SEA-LION is a dark reddish brown, the flippers being dark-brown as are also the belly and feet.

The hairs of the moustache are whitish or yellowish white with brown underneath near the roots.

The length of the adult male is from seven to eight feet and of the female from five to six feet. The fur is short, prickly to the touch and hard. It is said that the SEA-LION attains its full size at the age of nine years.

III. GENUS—*CALLORHINUS*, Gray.

Synonyms :—*Arctocephalus*, Gill.

This GENUS is represented by only one species which is found in the Northern Pacific Ocean.

The SEA-BEAR Buffon, (*Callorhinus ursinus*, Gray.)

Synonyms :—*Ursus marinus*, Steller.

Phoca ursina, Linn.

Otaria ursina, Péron.

Arctocephalus ursinus, Gray, Lesson.

Le chat marin, Kraschenninikov.

Ursine seal, Pennant.

The *Fur seal*, well-known in Alaska.

The SEA-BEAR'S fur consists of an outer covering of long, flattened and rather stiff hair, under which is a thick coating of fine, long, silky hairs, which on nearly every part of the body are as long as the others. The hairs are thicker at the upper end than at the root, a peculiarity which is especially observed in the first coat of fur on the young ones. The average length of the adult male is from six feet to six feet and a half, and its weight from four to five hundred pounds, the female being much smaller.

In the museum of the Geological Survey of Canada, at Ottawa, there is a specimen of the *Callorhinus ursinus*, Gray, excellently preserved, stuffed and mounted very artistically.

This SEAL, as has already been observed, belongs to the family of the OTARIES. It is easily known by its narrow and pointed ears

about two inches long. Its flippers and feet are hairless from the elbow and knee respectively; the digits are very long and pointed and covered with a black and shining membrane extending beyond the ends of the digits and ending in five long flaps about an inch wide, hanging from the digits. Its moustaches are strong and pointed backwards. This PINNIPED, which is not found in the Eastern seas of North America, was captured on the coast of British Columbia.

II. FAMILY—The PHOCIDAE, (Allen.)

SEALS are the Pinnipeds which most resemble man in their outward form.

Mr. J. A. Allen (History of North American PINNIPEDS) brings down to seventeen, divided into ten species, the one hundred and three kinds which had been successively catalogued, and they might be still further reduced.

SEALS are met with on the shores of all temperate or cold regions; but it is in the Northern hemisphere and also mostly in the high latitudes that the Seals of the *Phoca* genus dwell. The species of SEAL which has the most extended habitat is the COMMON SEAL (*Phoca vitulina*, L.); it is met with in all the Northern parts of the Atlantic Ocean from the Northern coasts of the United States, on the West, to the Straits of Gibraltar on the East, and in the Pacific Ocean from California and Kamtchatka to the Arctic regions. SEAL hunting is most extensively carried on in the Gulf of St. Lawrence and on the coast of Newfoundland. The COMMON SEAL is found there all the year around. The icebergs driven by wind and currents from the North about the end of February bring a considerable contingent of of the three kinds: *Phoca Groenlandica* Fabr.; *Cystophora cristata* Gm.; *Erignathus barbatus*, Gill. Every year about twelve or thirteen thousand sailors who venture forth amidst the ice in their iron-sheathed vessels of from eighty to one hundred and twenty tons, are employed in hunting them. Now-a-days many steamers are used in this dangerous chase. As before mentioned, the number of SEALS killed annually is computed at one million, and yet they appear as plentiful as ever in the Gulf of St. Lawrence and the Newfoundland seas.

But this is no longer the case on the Island of Jean Mayen or in the North of the Old World. These animals were formerly so

numerous at these places, that one was little concerned about them until recent years. But the ruthless massacres, without regard to season, age or sex, of these victims to human avidity, have at length opened our eyes, and so marked a diminution in the number of SEALS has been noticed, as to give rise to fear that this industry may be ruined. The English Government wishing to put a stop to this destruction, passed in 1870 a law for the protection of these animals, which law was also adopted by other nations interested in this fishing. By this means it is hoped that not only will destruction be averted, but also that the number of these animals will be increased.

The PHOCIDAE which inhabit the seas of the North-Eastern portion of North America are naturally divided into two secondary groups or sub-families. The first group comprises the SEALS proper and the second group the *cystophorae* or *hooded* SEALS.

I. SUB-FAMILY—PHOCINAE, Gray.

These group comprises the three following genera :

I. SEALS (*Phoca*, Linn.)

Synonyms :—*Phoca*, Linn.

Pusa, Scopoli.

Callocephalus, F. Cuv

Pagophilus, Gray,

Pugomys, Gray.

Halicyon, Gray.

This genus comprises the smaller species of SEALS. The three following species are well known :

Their dental formula is as follows : Incisors, $\frac{1}{1}$; Canine, $\frac{1-1}{1-1}$; Molar, $\frac{5-5}{5-5}$.

Their incisors are small and pointed, their canine teeth are not generally very long, but are blunt, whilst the grinders have flattened crowns, with sharp and cutting edges, numerous conical points and single roots.

SEALS are able to remain under water from fifteen to twenty minutes or more before coming to the surface to take breath. They

live in herds on the shores of the Northern seas. They change their abodes according to the season. When the rigorous winter of the Arctic seas set in, they migrate to temperate seas, each species going its own way and being careful not to travel with a different species.

SEALS are generally considered monogamous; among certain kinds, however, a family consists of one male, three or four females and little ones; gestation lasts about nine or ten months and there are one or two, but rarely three, little ones at a birth. They love to bask in the sun, on banks, rocks and floating ice, on which they give birth their young ones. At this time of the year, SEALS withdraw to uninhabited localities, where the females suckle their young for two or three months, and lavish the tenderest solicitude upon them. SEALS are easily tamed, they become attached to their keepers, give proof of common intelligence and have several points of resemblance with the dog; whence comes the name of *sea dogs*—which is often applied to them. Their food consists of sea birds, fish, crabs and molluscs, which they catch whilst swimming. When, in the Arctic seas, SEALS find themselves under vast fields of ice, they force a hole through them in order to breathe.

SEALS are very fat in the Spring during the months of March and April, and in Autumn in November and December. At those times, the oil as well as the skins become the object of an important commerce. SEALS dwell in the glacial Arctic ocean in Summer. They do not reappear in the straits of Belle-Isle until about the end of November, and return to the West following the North shore of the Gulf of St. Lawrence as far as Cape Whittle, from which point the greater number go South, and disperse in the floating ice of the gulf, where the females give birth to their young about the month of March. The fishermen hunt especially during this month and April. The SEALS come nearer the coast about the commencement of June, and go eastward, in order to return to the open sea by the straits of Belle-Isle. From time immorial SEAL hunting or fishing has been carried on in the waters of the Gulf of St. Lawrence. Schooners of about eighty tons with crews of from twenty-five to thirty men are preferred to others.

Between the years 1838 and 1848 as many as from four to seven hundred thousand seal-skins were exported annually from Newfoundland. In 1847, three hundred and twenty one vessels, representing three hundred thousand tons, and manned by ten thousand men, were engaged in the fisheries in the neighbouring seas.

It may perhaps be as well to observe that the vulgar names which follow the scientific names, such as :—*sea-calf*, *sea-cow*, *sea-horse*, *sea-lion*, *sea-elephant* and *sea-bear*, have no precise meaning, and do not mean that there are some points of resemblance between these marine animals and those on land of the same names. Travellers, fishermen and sailors have wrongly and inconsiderately applied these names to the different kinds of herbivorous cetaceans, SEALS, WALRUSES, &c.

1. The COMMON SEAL (*Phoca communis*, Linn.)

Synonyms :— *Phoca vitulina*, Linn.

Callocephalus vitulinus, F. Cuv.

Phoca littorea, Thienemann.

Phoca concolor, De Kay.

Also called *veau-marin*, *loup-marin*, *chien-marin* by the French. The Canadians and Acadians on the shores of the Gulf of St. Lawrence call it the *loup-marin d'esprit*; the Anglo-Americans call it the *Harbor Seal*, also *Bay Seal*, *Land seal*, *Sea-calf*, *Sea-dog*, while Newfoundlanders call it the *Native Seal*, owing to its sedentary habits.

The fur is yellowish, with black irregular spots. It is seldom seen in large herds. Its length is from 4 to 5 and even 6 feet, and from two to three gallons of good oil may be obtained from one, although some enormous ones have been killed, which have given eight and even twelve gallons. The skin serves to make boots, caps, and trunk covers, &c., &c. The commercial value of the skin and blubber varies from \$2.50 to \$4, without counting its bones from which phosphate of a superior quality may be manufactured. They are killed by either being shot or struck on the nose with a club or hatchet &c., when they are asleep on the shore or on rocky islands. A large number are also caught in nets, especially when young.

The habitat of this seal extends over a considerable area. It is quite common in the Lower St. Lawrence and Gulf and is seen in great number along the coasts of Newfoundland and Labrador as well as on the shores of Davis Strait and Greenland &c., in all seasons of the year.

It also inhabits the Pacific Shores of America from California to Behring's Straits. The Canadian Geological Museum has a very fine specimen brought from British Columbia.

The HARBOUR SEAL is found not only on the shores of the North Atlantic and Pacific Oceans and in the great inland seas, but it also ascends all the rivers which fall therein and often at a great distance from tidal waters. It has even been known to go up the St. Lawrence as far as Lake Ontario, one having been found near Cape Vincent about 1824. Some also have been caught in Lake Champlain, one between Burlington and Port Kent on the 25th February, 1846, the lake being all frozen over with the exception of a few air-holes. (See *Natural and Civil History of Vermont*, 1842, p. 38 and 1853, p. 13 of the Appendix.)

SEALS also ascend the Columbia River as far as the Dalles, two hundred miles from its mouth. Dog River, one of its tributaries, owes its name to the circumstance of a SEAL, or SEA-DOG, having been seen in the lake, whence it takes its source.

2. The RINGED SEAL (*Phoca Annellata*, Nilss.)

Synonyms: — *Phoca Pusa foetida*, Fabr.

Phoca hispida, Schreb.

Pagomys foetidus, Gray.

Callocephalus hispidus, F. Cuv.

This is the *Phoque marbré* of F. Cuvier. It is also called *Floer Rat* by the English.

The RINGED SEAL differs but little from the COMMON SEAL. However, it is easily distinguished by its ringed spots, by its slighter shape, its longer tail and narrower head and sharper muzzle. The name *phoca foetida* has been given to it on account of the foetid smell of the old ones, and that of *hispida* owing to its stiff hair. Its skin is spotted with black, yellow and white. Its length is about five or six feet. It yields on an average six gallons of oil. Its skin sells for one dollar, its total value being four or five dollars. This species of SEAL is rare. It is found chiefly on icebergs and gives less oil in proportion to its size than ordinary SEALS.

The female is much smaller than the male. The young ones from their birth to the age of four weeks are generally white or of a yellowish white colour. Their fur is then close and woolly, but when they are a month old it falls off and is replaced by the coarser hair of

the adult SEAL. Their colour imperceptibly changes from white, or yellowish white, to brown spotted with black patches. However, it frequently happens that the young ones retain their white or yellowish colour after the first month, but it is darker along the back and spotted with small dark patches.

As a rule, the colour varies greatly among adults of the same sex and age.

The RINGED SEAL differs outwardly from the HARP SEAL by its smaller size and the colour of the adults, which is different in both species.

Although it is established that this SEAL inhabits the Arctic seas of both hemispheres, the Southern limit of its habitat cannot be exactly determined. Still it is admitted that it inhabits the Northern shores of the St. Lawrence and the coast of Labrador. It does not appear to have been found on the shores of Newfoundland and Nova Scotia, and still less further South.

Northwards and especially along the shores of Davis Strait and coast of Greenland it is found in great numbers.

The celebrated navigator and explorer Parry, saw it at latitude $82^{\circ} 40'$ North.

The Canadian Geological Museum possesses a very fine specimen of the *Phoca foetida*, Fabr., brought from Cape Digges in Hudson's Bay. There are five digits on all the limbs as in all the other pinnipeds. The first digit of each flipper is the longest and the others gradually diminish in size to the outer one which is the shortest. The extremity of the digits of the flippers describe the arc of a circle. In the feet the outer digits are longer and larger; then come the second and fourth, the third or middle digit being the smallest and shortest. The shape of its muzzle is that of a truncated cone slightly pointed.

The claws of the flippers project more than those on the feet. Its hide is covered with ringed spots.

Its length is about six feet. Its tail is two or three inches in length.

3. The HARP SEAL, (*Phoca Groenlandica*, Fabr.)

Synonyms :—*Pagophilus Groenlandicus*, Gray.

Callocephalus Groenlandicus, F. Cuv.

Phoca lagura, G. Cuv.

Phoca pilayi, Lesson.

Le Phoque à croissant, Buffon.

The English also call it *Greenland Seal* and *Saddle back Seal*. They also call the young ones *Whitecoats*. In the French language of the Gulf it is called *Le Brasseur*; The Montagnais Indians call it the *Wastic*. The Magdalen Island fishermen call it *Le Cœur*.

Its common name **HARP SEAL** is given from the fact that when it is full grown or five years old it has two crescents or harps on its back, black in colour, with the points facing each other and which appear in relief on its greyish white fur inclining to yellow.

This seal is chiefly met with in the Arctic seas, and on the Greenland coasts, but in Autumn and Winter it frequents the coasts of the island of Newfoundland and the Gulf of St. Lawrence in innumerable herds. It returns to the open sea in the spring. During the months of March and April the **HARP SEAL** is hunted and either shot or killed by blows from a club whilst it is on the floating ice. It is also caught on the coasts of Labrador in large numbers in nets adapted to that kind of fishing. This seal attains six or eight feet according to its age. The adult gives from ten to twelve gallons of oil. The skin sells from \$1.20 to \$2.40. The total value of this seal is from four to eight dollars. This seal is the one which the Esquimaux hunt the most; they hunt it with spears. These savages are very partial to the flesh and blubber of this animal. They also use the oil to light their lamps in their huts during the long nights of winter. Its liver fried is regarded as a dainty morsel by Arctic navigators. A better kind of oil and in greater abundance is obtained from this **SEAL** than from any of the other kinds. Its skin is also more highly thought of. It has been stated that they often fall a prey to **GRAMPUSES** (*Orca gladiator*, Gray) and other cetaceans of the northern seas.

In the Canadian Geological Museum there is also a splendid specimen of the GREENLAND SEAL, admirably stuffed and mounted. It was brought from Hudson Straits. It has five digits on each limb, like all the other members of the family.

The digits of the flippers gradually decrease in length from the thumb to the little finger, the tips of the fingers forming an oblique line from front to rear. The toes are very much like the fingers. The fore-part of the head and the muzzle are black. The hair is greyish white with a black band on each side, wider in the middle in the shape of a crescent and extending from the top of the back between the shoulders, where the extreme ends of the two crescents meet, to the hind part where the ends of the line of crescents are broken and they are represented merely by spots of the same colour running in the same direction as the crescent.

Its length is about five feet and a half and its tail is four or five inches long. The hair of the young ones during the first weeks of their existence is white and fleecy.

Rink calculates that over thirty three thousand HARP SEALS are taken every year on the ice-floes of the Greenland sea, seventeen thousand five hundred being full grown and fifteen thousand five hundred young SEALS. On the other hand, he calculates that not less than five hundred thousand of these pinnipeds are captured every year in the ports of Newfoundland alone, and three hundred thousand every year in the Jan-Mayen waters, so that the total annual catch of this animal amounts to nearly nine hundred thousand in those seas alone.

II. GENUS—ERIGNATHUS, Gill.

Synonym:—*Phoca*, Gray.

The SEALS of this genus have broad muzzles and high, rounded foreheads. Their dental formula is the same as for the preceding ones, but the teeth are smaller; the molars being spaced, not very solid in their sockets, wear out rapidly and fall out when the animal gets old. The lower jaw is short. The middle digits of the flippers are the largest.

4. The BEARDED SEAL (*Erignathus barbatus*, Gill.).

Synonyms:—*Phoca barbata*, Fabr.

Callocephalus barbatus, F. Cuv.

Phoca leporina, Lepechin.

Lachtak or *Laktak* of Kamtchatka.

Ou-souk of the Greenlanders.

It is called the *Square Flipper* by the Newfoundland fishermen, the *Ground Seal* by those of Spitzbergen. The English authors call it the *Bearded Seal* and *Great Seal*. Although the BEARDED SEAL is the largest of the *Phocidae* of the Arctic regions, its head is smaller than those of the *Grey Seal* and the *Hooded Seal*, which will be mentioned further on. It inhabits the shores of the Gulf of St. Lawrence with the *Harp Seal*.

This SEAL, the *Wabishtouis* of the Montagnais is from six to twelve feet in length. The skin and blubber of the male weigh from seven to eight hundred pounds; those of the female from five to six hundred. The skin, without the blubber, is said to be worth about two dollars. The total value of a large full grown SEAL is from twenty five to thirty dollars.

There is also a specimen of this SEAL in the Canadian Geological Museum. Its body is very large and measures over eight feet in length. It was brought from Hudson's Bay in very good condition. The expert taxidermist attached to the Museum has succeeded remarkably well in giving to this terrible pinniped the appearance which it must have in its own element. The middle digit of the *manus*, is the longest and the outer ones, that is the thumb and little finger, are the shortest. The claws are long, prominent and extend a little beyond the digits, of which there are five on each limb. As in the case of other SEALS the middle digit of the *pes* is the shortest and the outer ones are the thickest and largest. However when the hind flippers are extended they appear to form a straight line or to be cut square whence their name: *Square Flipper*. The *Claws* are less prominent than those of the digits of the *manus*. The upper lip is swollen and extends a little beyond the lower one. The end of the muzzle is obtuse and split vertically in the middle. The tail is six or seven inches long.

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III. GENUS—HALICHOERUS, Nilss.

Synonym :—*Pusa*, Gill.

Its dental formula is the same as the *Phoca*, but the teeth differ greatly by their single, conical and cylindrical shape from those of the other genera of SEALS, for instance the roots are nearly all single. The cranium is likewise, almost the exact contrary of that of other SEALS. The word *Halichoerus*, given by Nilsson, means *Sea-hog* (from '*ale*, the sea and *choiros* hog).

5. The GREY SEAL (*Halichoerus grypus*, Nilss.)

Synonyms :—*Phoca grypus*, Fabr.

Pusa grypus, Gill

Callocephalus scopulicolus, Less.

Halichoerus macrorhynchus, Hornschuck and
Schilling.

Holichoerus griseus Nilss.

Ut-selur of the Icelanders.

This SEAL is found only on the shores of the Atlantic Ocean, and even there its habitat is a very limited one ; it does not range further South than Sable Island and Nova Scotia. It comes into the Straits of Belle-Isle and along the Southern coast of Labrador, where some are caught every year either on the ice or in the fisheries.

It has three or four front molars, single rooted. Its general colour is grey and brown, variously distributed. It is found in great numbers on the shores of Iceland. It is not very intelligent and cannot be tamed. The old ones are said to be very quarrelsome.

The GREY SEAL seems to be the least known of the Northern *phocidae*. On the East Atlantic coast, it ranges as far South as Sable Island and also, according to Gilpin, the shores of Nova Scotia. It selects low-lying islands and rocky beaches for bringing forth its young in the Autumn.

Fabricius is the first naturalist who gave a systematic name to this SEAL. He called it *phoca grypus* and not *gryphus*, as some authors still write it. But Nilsson, as early as 1827, gave the correct spelling *phoca grypus* or CROOKED-NOSE SEAL.

The GREY SEAL is also found in the Baltic Sea, on the shores of Great Britain, Norway, Iceland, Southern Greenland, &c., in Hudson's Bay, but not in the extreme Northern seas. When young it sufficiently resembles the young sea-calf (*Ph. vitulina*, Linn.) to be mistaken for the latter. But when full-grown it is easily known by its great size. Its length is eight or nine feet and its weight four or five hundred pounds, while the length of the ordinary SEAL does not exceed four or five feet and its weight a hundred or a hundred and fifty pounds. There are also striking differences between the two. For instance the GREY SEAL differs from the common SEAL by its larger muzzle; by its conical molars which are as thick as they are long and have single roots; finally, by the colour of its fur, in which grey predominates, being of a darker shade on the back and lighter on the belly and varying according to the age and sex of the animal. Great difficulty is experienced in accustoming it to captivity. Its food consists chiefly of molluscs and crustacea.

II. SUB-FAMILY--CYSTOPHORINAE, (Gray.)

This group comprises two genera, only one of which is found in our seas.

GENUS--CYSTOPHORA, Nilsson.

Synonyms:—*Stemmatopus*, F. Cuvier.

Stemmatope, F. Cuvier.

Mirounga, Gray.

The HOODED SEALS have their teeth disposed as follows: Incisors $\frac{2-2}{1-1}$; Canine $\frac{1-1}{1-1}$; Molars $\frac{5-5}{2-2}$; the molars with small, plaited crowns, a distinct neck and very thick swollen roots, with the exception of the fifth upper which is double-rooted, as is also sometimes the fourth upper.

The digits are armed with large powerful claws. Outer digits are but little longer than the middle ones.

The word *Cystophora* is derived from *Kustis*, bladder, *phoros*, bearer.

In 1862, the fishermen of House Harbour and those of Grindstone Island (Magdalen Islands) returned from hunting SEALS amidst the

floating ice on the Gulf. They had been particularly successful, for the number of SEALS they brought considerably exceeded that of preceding years. Amongst others, they had killed a large number of *Cystophorae*, the largest kind of SEAL which is met with in the Gulf of St. Lawrence. The blubber with the skin of this animal weighs as much as from three to even four hundred pounds. It is calculated, ordinarily, that one gallon of oil is obtained from every ten pounds of blubber.

6. The HOODED SEAL (*Cystophora cristata*, Nilss.)

Synonyms :—*Phoca Canina*, Linn 1766.)

Stenmatopus cristatus, F. Cuv.

Phoca cristata, Erxl.

Cystophora borealis, Nilss.

The English also call it the *Crested Seal* and *Bladder nose*; the Greenlanders call it *Neiterssoak*.

The HOODED SEAL is considered the most courageous of all SEALS. It does not hesitate to attack its assailant and is a formidable adversary. Its hood is bullet-proof.

The female which is less ferocious than the male allows itself to be killed with its young rather than abandon it.

This SEAL is remarkable on account of a globular bag susceptible of being dilated, which the male has on his head and nose, and with which he can cover his muzzle at will. Its nostrils are so dilatable, that they resemble bladders when they are inflated. It sometimes measures from seven to nine feet in length. Thirty and even forty gallons of oil are obtained from it. Its skin costs from two to three dollars. Its total value is from fifteen to twenty five dollars. The body is very large and very fat.

The HOODED SEAL frequents the Gulf of St. Lawrence about the close of Autumn in pretty numerous herds. Later on in the season, hunters find them on the floating ice of the Gulf, where the females give birth to their young. Numbers are killed during the first days of Spring, especially about the Straits of Belle-Isle and St. Paul's Island. The skin of these animals is in great demand on the market. They like to crawl on the ice floes of the high Northern latitudes,

which the wind and currents drive towards the coasts of Labrador. The *Cystophoræ* are polygamous and go about in families. When wounded they become fierce and fight furiously among themselves.

This SEAL inhabits the cold regions of the Atlantic Ocean and the glacial waters of the Arctic Ocean. To the East it extends from Greenland to Spitzbergen. It is seldom found South of Newfoundland and on the shores of Nova Scotia. It migrates regularly, like the HARP SEAL, but in smaller numbers. It comes in rather large herds into the Gulf of St. Lawrence, where many are killed on the Southern coast of Labrador, on the adjacent islands: St. Paul's, Grand Mecatina Islands, &c. Some have been killed on the shores of the New England States. Professor Cope also says that some have been caught as far as Chesapeake Bay, near Cambridge, Maryland. However, this SEAL prefers the ice floes of the high seas to the vicinity of the shore. It is but seldom found on rocky islands. It prefers to bring forth its young on ice floes far from land during the month of March, about eight or ten days later than the HARP SEAL, whose society it does not seem to seek, although both species are frequently found on adjacent ice fields. It is considered the most courageous of all SEALS and does not hesitate to attack its aggressor and is then very formidable.

The young ones are said to be easily tamed and to be then more docile than the young HARP SEALS.

Their food consists of fish, squid, &c.

It is estimated that not less than three thousand HOODED SEALS are captured every year on the shores of the seas adjacent to Greenland, where they are generally caught on the ice-floes. In Newfoundland and Labrador they are shot and also caught in nets. In conclusion, we may add that the hood protects these animals to such an extent, that, not only it is very difficult to kill them with a club, but also with a heavy charge of shot. This, added to their natural ferocity, makes the hunting of these SEALS very dangerous.

Some fossil remains of SEALS, especially of COMMON SEALS, have been found in the upper tertiary formations of America and Europe.

In preparing the above work, the author has followed, as much as possible, the plan adopted by Mr. J. A. Allen, Assistant in the Museum of Comparative Zoology at Cambridge and Special Collaborator of the Survey of the State of Massachusetts, in his admirable history of the PINNIPEDS of North America, a work which he regrets very much not to find in the Library of the Quebec Legislature or in that of the Department of Public Instruction. Notes taken in the very places frequented by these mammalia during the two voyages which the author made to the Gulf of St. Lawrence and the Coast of Canadian Labrador have supplied him with an amount of information which has been of great use to him. The fine specimens of the SEAL (*Phoca vitulina*, Linn) the HARP SEAL (*Phoca groenlandica*, Fabr) and the HOODED SEAL (*Cystophora cristata*, Nilss) in the Museum of Laval University, Quebec, have enabled him to compare his notes with the subjects themselves. The author desires to express his thanks to Mr. C. E. Dionne, the Curator of the Zoological Museum of Laval University for his kind assistance on many occasions and especially for giving him access, not only to the valuable museum under his care, but also to the Library, one of the largest and most complete in Canada, containing over ninety thousand volumes.

Since the above has been written, the author has had the good fortune to visit the Museum of Geology and Natural History of Canada at Ottawa, which is in every way a credit to the country whose animal, vegetable and mineral wealth it displays in all its splendour. The author cannot conclude this humble work without expressing his thanks to Dr. Selwyn, the Director of the Geological and Natural History Survey of Canada and his learned collaborator, Dr. J. F. Whiteaves, the palæontologist and zoologist of the Survey, for all their kindness to him during his visit to the Museum of the Survey in the beginning of August, 1887.

On entering the Museum, the visitor observes, amongst the numerous specimens of terrestrial animals skilfully and tastefully mounted, a collection of PINNIPEDS of the Canadian seas. In the first place, there is a head of a MORSE (*Odobenus rosmarus*, Malm.) with its two huge tusks; then a SEA-BEAR (*Callorhinus ursinus*, Gray), a denizen of the Western shores of Canada; pinnipeds of the family of *Otaridae* or EARED SEALS. The *Phocidae* or EARLESS SEALS are also represented by very fine specimens, excellently mounted. There is a COMMON SEAL (*Phoca vitulina*, Linn.) taken on the coast of British Columbia; a HARP SEAL (*Phoca groenlandica*, Fabr.); a MARBLED SEAL (*Phoca (Pusa) foetida*, Fabr.) taken at Cape Digges, in

Hudson's Bay ; a BEARDED SEAL (*Erignathus barbatus*, Gill.), also from Hudson's Bay ; and finally, a HOODED SEAL (*Oystophora cristata*, Nil.s.), forming a splendid collection of PINNIPEDS which have been alluded to in the previous pages.

The author tenders his warmest thanks to Dr. Selwyn, who continues the work commenced by the illustrious and regretted Sir William Logan, and to his learned and zealous collaborator, Dr. Whiteaves, for their cordial welcome to the museum and for their unceasing kindness to him up to the moment of their departure, Dr. Selwyn for British Columbia and Dr. Whiteaves for New York. His thanks are also due to Mr. H. M. Ami who, after the departure of those gentlemen continued to assist him in completing the information which he went to obtain at the Dominion Museum. Mr. Ami, although quite a young man, has already made himself very useful by the varied knowledge he has acquired at an age when most young men think only of amusement. Mr. Fletcher, the entomologist of the Survey, is also entitled to the author's thanks for his courtesy and kindness in exhibiting his splendid collections of *Lepidoptera*.

Professor Macoun was then in Vancouver Island collecting plants and studying the *Flora* of that region and was to return only in the Fall. The author greatly regretted the absence of this distinguished botanist whose herbarium, judging from appearances, must contain at least seven or eight thousand specimens of Canadian plants. He therefore merely repeats his thanks to that gentleman for having examined and named his botanical specimens one, by one, up to the *Mosses* exclusively and without asking any remuneration whatsoever for such a difficult and tedious task. The Museum of Canada, whose existence is due to the science and assiduous labours of Dr. Selwyn and his learned colleagues and collaborators, does as much credit to the governments which supplied the necessary means for its establishment and support, as to the founders and present managers of this really national undertaking.

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APPENDIX IV.

CETACEA.

The animals known by this name constitute the last order of the mammalia class, according to Cuvier's system, and the fifth in that of Dr. Theodore Gill of the Smithsonian Institute, Washington, which at the present time is that generally adopted in America. These animals are destined by their organization to dwell in the sea, hence their enormous bulk. It is beyond contradiction that among Cetaceans the largest known animals of the present day are found. CETACEANS have a fish-like form; but when they are studied from an anatomical and physiological point of view, it is soon seen that they really belong to the mammalia order. If they are only considered outwardly, it will be seen that they have no apparent limbs. In point of fact, these animals have no hind limbs, and if front ones exist, they only serve as fins. Their huge form is terminated by a thick tail, which ends in a horizontal fin, divided into two lobes; the head is connected with the body by a neck so short and thick as to be imperceptible. The neck is composed of very thin vertebrae partly joined together. With regard to the fore-limbs they are anatomically the same as other mammalia. Their bones are the same, and are in the same order, with this difference however, that the bones of the shoulder and forearm are shorter in proportion to the size of this animal, and that those of the *manus* are flat, and covered with a tendinous membrane.

The posterior part of the abdomen has only two small bones which represent the rudiments of a pelvis, and further back are V shaped bones on which the flexor muscles of the tail are inserted. The strength of this organ is prodigious. It is the chief propeller; for the front limbs, viz: the fins, only enable the animal to keep in its natural position or to move from right to left. The tail of CETACEANS being horizontal, as has already been observed, these animals can only move it by upward or downward strokes, which movement enables them to dive with great facility, but which also accounts for their progress only being effected by jerks, alternately rising and diving in the liquid element. The PORPOISES (*Phocaena, vulgaris*, Linn.) turn such summersaults that one might think they were always ready to tumble over. In CETACEANS, that part of the cranium which encloses the internal hearing apparatus, is separated from the rest of the head, and is only joined to it by simple ligaments. These animals breathe by lungs, are warm and red-blooded, and the heart has two

auricles and two ventricles. They are unable to breathe under water, and are obliged to come frequently to the surface for the purpose of inhaling air. They can easily remain under water for from ten to twenty-five minutes, owing to their having under the pleura on each side of the vertebral column a vast plexus of vessels filled with oxygenous blood, which enables them to remain for a more or less lengthy period at the bottom of the sea without coming up to the surface to breathe.

The breathing apparatus is admirably adapted to their kind of life ; in effect, the nostrils are placed on the very top of the head, which enables this animal to breathe without raising its muzzle above water. They are viviparous, the females suckle their young, and their milk is the same as that of large ruminant mammalia. Several amongst them are entirely destitute of teeth, and those which have them, have them all alike. Their senses are but little developed, with the exception of sight which appears good enough, and that of smell.

CETACEA are the mammalia of the ocean ; they are warm-blooded and air-breathing animals, whose organization permits of their living in the vast depths of the sea, of which they are the lords and masters. Although the Shark and Sword-fish attack and devour the smaller dolphins, no cold-blooded marine monsters can withstand the voracious ORCA or GRAMPUS from its formidable rows of teeth, its indefatigable activity and matchless swiftness. As to the enormous Whalebone Whales, they are protected by their massive size and their strength against the assaults of animals of other orders, and the long arms and deadly suckers of the Kraken or Cuttle-fish are of but little avail when the jaws of the enormous Cachalot close upon it, and the efforts of this terrible *cephalopoda* to escape from this redoubtable cetacean, are as fruitless as those of a mouse in the claws of a cat.

The structure of the nasal cavities differs considerably from that of other mammals.

The nostrils, instead of extending to the end of the nose, run upwards through the flesh to the top of the head, where there are one or two blow-holes which enable the animal to breathe without raising the head above water.

The eyes, which are small, have no third eye-lid ; the ears present no apparent concha outside, but inside they do not much differ

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from those of other mammals. The sense of touch and that of taste appear to be well developed.

The female has two *mammæ* situated in the depressions on each side of the *vulva*.

The full-grown Cetaceans are almost entirely devoid of the usual covering of other animals of the same class.

When they have teeth, these are not divided into incisors, canine and molars but they resemble each other in their simplicity of structure and their shape which is generally conical. They are shed only once. Their sockets are completely separate from each other; no tooth has more than one root in the modern species.

In the majority of cases the presence of CETACEA is announced by the noise which they make in breathing or as it is called *Spouting*. This is done by their throwing a double or single column of spray according to the species, higher or lower and at longer or shorter intervals, the ejection of which, lasting for a more or less lengthy period, is accompanied by a noise which varies in intensity. I have heard it said, and have even read in books, that this column proceeds from water which enters the mouth of the cetacean, and which it forcibly ejects by the double or single blow-hole which it has in the top of its head. Such however is not the case. In the first place the water cannot pass from the mouth to the breathing channels of the cetacean; this column is only composed of hot air, and of a very small quantity of water pulverized in this air, and of fatty particles. When the temperature is colder and the sky more overcast, the column appears whiter and thicker and is visible for a longer time; the same effect is visible with ourselves when we breathe in winter. The higher the temperature becomes, the less visible is the spouting and it sometimes even becomes invisible when the temperature is hot and dry; then, the only indications of their neighbourhood are the noise of their breathing and the view of a portion of their bodies showing above the water.

These animals are furnished with the pectoral limbs alone and even these take the shape of fins. The posterior extremity of the trunk widens into an enormous caudal fin, flattened horizontally and divided, as we have already said, into two lobes. The skin of the CETACEA is naked and the scrotum is wanting. There is neither neck nor external ears. The caudal fin of the CETACEA is horizontal,

while that of the fish is vertical ; the position, in both cases, answering perfectly the requirements of the animal. The vertical tail of the fish is a propeller by means of which it cuts the water with extraordinary rapidity, while remaining at an almost uniform depth, the organism of the fish not requiring that it should rise to the surface for the purpose of breathing. The organism of the CETACEAN, on the contrary, is such that it is compelled to seek the surface of the Ocean whenever it feels the need of breathing. The horizontal tail then acts as an oar of inconceivable power.

At the enormous Ocean depths from which the WHALE is propelled upwards by this mighty lever and brought into contact with the atmosphere, the pressure it encounters is so great that a special structure of the body is required to preserve the animal from destruction. This pressure cannot, in the majority of cases, be less than one hundred and fifty times as great as that of the atmosphere, equal to one ton for each square inch of the surface of the animal's body. The most evident and most efficacious mode of resisting so strong a pressure consists in thickening the integument or in enveloping the entire body in some incompressible substance. This is indeed what Providence has done for the WHALE in the most admirable manner.

It is now known that the structure in which the oil is deposited, and to which the name of "blubber" has been given, is the skin itself, modified in such a way as to retain the fluid oil. This skin, like that of ordinary animals, consists of a network of interwoven fibres, crossing each other in all directions, but the texture of these fibres is looser and more open, thus leaving spaces in which the oil has room to gather. A layer of fatty matter, like that which is found in swine, would not have answered the purpose, for, though double the thickness of that usually found in the CETACEA, it could not have resisted the superincumbent pressure ; whereas, by its being a modification of the skin, always firm and elastic, and, in this case, being never less than several inches, and sometimes between one and two feet thick, it operates like so much india-rubber, possessing a density and resistance which, the more it is pressed the more it resists. Owing, therefore, to the nature of its skin, the WHALE can plunge into the remotest depths of the Ocean and remain there ten, fifteen and even twenty minutes, sustaining all that time without inconvenience the enormous pressure that weighs upon it. The blubber also, being one of the worst conductors of caloric, prevents the animal heat from escaping and enables the warm-blooded denizens of the

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Ocean to resist the low temperature of the medium in which they live. Moreover, as the blubber is specifically lighter than sea-water, although it at times exceeds thirty tons, far from being a burden to the animal, it renders it more buoyant. It is this supply of blubber which enables the RORQUAL, a monster of from ninety to one hundred feet long, the largest of the whole tribe and, consequently, the largest of all the animals at present found on our globe, to push forward its enormous mass and to float without effort on the surface of the water.

All modern CETACEA are divided into two primary groups which are the *Delphinoidea* and the *Balaenoidea* to which must be added a group of Seal-toothed animals *Phocodontia* composed of extinct species.

Delphinoidea.

The bones of the skull in these CETACEA are more or less deficient in symmetry, an anomaly due to the two blow-holes being united in one and to the abnormal development of the left nostril. The head is frequently elongated like a muzzle, especially in the dolphins proper. They have a single blow-hole outside and the spray thrown out by this opening, instead of ascending like a jet of steam, as with whales, condenses into water on coming into contact with the air and trickles down the sides of the head. These CETACEA generally have a dorsal fin, varying in shape and size. The body is long and shaped like a fish. The mouth is armed with numerous teeth, all alike.

The *Delphinoidea* are divided into six families, three of which are represented in the River and Gulf of St. Lawrence. They are the: *Belugidae*, the *Orcadae* and the *Delphinidae*, to which might perhaps be added that of the *Ziphiidae*, of which the *Hyperoodon* inhabits the Northern Atlantic Ocean and adjacent seas.

The BELUGIDAE.

This family has only two well-defined genera, the *Beluga*. *White Porpoise* or *White Whale*, and the *Narwhal* or *Sea-Unicorn*, both of which have short and rounded heads and but few teeth. These two genera have no dorsal fin, but a small pectoral fin of oval form and five conical vertebrae.

THE BELUGA OR WHITE WHALE (*Delphinapterus leucas*, Linn.)

Synonyms: — *Delphinapterus catodon*, Gill.

Delphinapterus beluga, Lac.

Delphinus albicans, Brunn.

Delphinus leucas, Linn.

The BELUGA or WHITE WHALE also called WHITE PORPOISE and *Marsouin* by the French Canadians and the French before the cession of the country to England.

The BELUGA attains a length of from twelve to twenty feet and over. Its colour is a yellowish, white or cream colour, when full-grown. The young ones are leaden grey or blueish black, but as they grow older they become mottled and gradually lose their darker tints to assume the colour of the full grown animal. The forehead of the BELUGA is rounded, but between the head and the back there is a depression at the neck. The pectoral fins are short, fleshy and situated further back from the eyes than the latter are from the front of the jaws.

There are no dorsal fins. The opening of the blow-hole is inclined backwards. A Beluga, sixteen and a half feet long, measured three feet ten inches across the lobes of the tail, and the pectoral fins were one foot eleven inches long. The number of teeth varies from six to eleven on each side in each jaw. This cetacean is a fast swimmer and feeds on large fish which it pursues, not only along the sea-coast, but also in the rivers which it sometimes ascends for a great distance. In 1886, five were seen disporting themselves in the harbour of Quebec and ascending the river as far as *Pointe-aux-Trembles*, thirty miles above Quebec. The BELUGA, of which there may be more than one species, inhabits a wide extent of sea. It is also found in the Northern parts of the Atlantic and Pacific Oceans. It is very common in the River and Gulf of St. Lawrence and has been seen in large schools in the Baie des Chaleurs and Gaspé Bay. It is met with mainly from Matane and Pointe-des-Monts to Île-aux-Coudres. It travels in great herds and yields oil of superior quality. Large numbers were formerly caught during the Spring at the Île-aux-Coudres and at Rivière Ouelle; and in the Fall at the mouth of the Saguenay, where great numbers always spend the Winter.

On the 5th of July, 1722, the Intendant Bégon approved a deed of partnership drawn up by certain inhabitants of St. Paul's Bay for the establishment of two stations for fishing Porpoise (*Delphinapterus Beluga*, Lac.) on the river front of the lands of René de Lavoye, Claude Gauthier dit Larouche and Jacques Fortier; and on the 17th July of the year following, 1723, the same Intendant Bégon forbade René Menu, Bertrand Perrot, François Deblois and Jean Dupont "to set any eel-nets within the limits of the said porpoise-fishing station, on pain of the exaction from each offender of a fine of five livres, to be applied to the uses of the Fabrique of Sainte Famille."

As we see, the establishment of fixed stations for the capture of WHITE PORPOISES was encouraged and as far as possible protected by the Intendants of New France. An ordinance of the Intendant Raudot, of the 13th July, 1707, authorizes the entering into partnership of Jean de Lavoie, Etienne Bouchard, Pierre Soucy, Jacques Gagnon, Pierre Boucher and François Gauvin, all inhabitants of Rivière Ouelle, for the working of a Porpoise fishery on the river front of their property. By another ordinance, dated the 6th day of June, 1710, the Intendant Raudot confirms another company formed by Jean Mignot, Louis Dubé and others, inhabitants of La Bouteillerie (Rivière Ouelle), for the establishment of a Porpoise fishing station at Pointe aux Iroquois. This ordinance states that: "It is the King's will that as many such fisheries as possible be established in this country."

Lastly, under date of the 18th of March, 1746, we find an ordinance or rather a decision of the Intendant Gilles Hocquart maintaining Augustin Roy dit Loziers, an inhabitant of La Pocatière, in the possession and enjoyment of his Porpoise fishery.

It has been observed, in cutting up a WHITE PORPOISE, that the tongue, instead of being free at the end and along the sides, as in most *Delphinoidea*, adheres as strongly as in the right whale, so that only the tip of the tongue can be moved about.

The inhabitants of L'Ile-aux-Coudres continue to carry on the WHITE PORPOISE fishery and catch from 20 to 30 every year.

The NARWHAL or SEA-UNICORN (*Monodon*, Linn.)

The UNICORN WHALE (*Monodon monoceros*, Linn.)

The skull of the NARWHAL resembles that of the BELUGA but instead of having as many teeth as the latter and as the other *Delphinoidea*, it has but one, an enormous tusk projecting from eight to ten feet beyond the jaw. This tusk is imbedded in a socket formed by the maxillary and intermaxillary bones on one side of the head ; and, imbedded in a similar socket, is a rudimentary tooth nine or ten inches long which does not exceed the surrounding bone. The size of the tusk is immense when compared with that of the body which is not more than thirteen or fourteen feet long and eight or nine feet in circumference.

In order to bear the weight of this tusk and to give it sufficient support, the facial portion of the skull is larger than in the other *Delphinoidea* and the socket extends far beyond the maxillary bone. The males only are provided with this terrible weapon, while the females have only two rudimentary teeth in the same position. However, Scoresby relates that he caught a female NARWHAL which had a tusk four feet three inches long. One of these tusks is in the Museum of Laval University at Quebec.

While the animal is alive the part of the tusk which is near the muzzle is covered with a layer of blubber which disappears towards the point as the tusk is used. The tusk, which projects in a straight line throughout its entire length, is spiral and marked on the outside by rounded ridges alternating with depressions. The length of the head of the NARWHAL is about one-seventh of that of the body. Its eyes are in line with the angle of the mouth and the ears are situated about six inches further back. The pectoral fins are about one-twelfth of the total length of the body and head.

The middle of the body is nearly cylindrical and the rear portion dwindles away in the shape of a cone to the root of the tail. The skin of the young ones is of a uniform bluish grey or slate-colour. Very old ones are nearly white. The skin of the full-grown animals is mottled grey, brown and black, the spots which are rounded or oblong in shape being on a white ground. The NARWHAL is also greyish white in colour with white spots which seem to enter the skin. The muzzle of the NARWHAL is swelled out and its mouth is small. A salient ridge of bone along the whole length of the spine takes the place of a dorsal fin. This species is met with mainly in the Iceland and Greenland seas, sometimes in very large shoals. It is hunted for the sake of its oil, which is of as good a quality as that of the whale,

and for its tusks which are used for the same purposes as ivory. Its name of NARWHAL (*Nar*, corpse. *Whal*, whale) is due to its supposed habit of feeding, as the Icelanders still believe, upon corpses. But it is now admitted that the food of the NARWHAL consists of mollusca, crustacea and fish, which last it kills with its tusk before eating. In the stomach of one of these CETACEA an arm of a squid and pieces of halibut were found.

The Greenlanders and Esquimaux eat its flesh, burn its oil in their lamps and with its entrails make clothing which is impervious to water, and also fishing lines. With its long tusk they make spears, lances, &c.

The NARWHAL inhabits the Arctic seas of both continents. However, it so rarely appears in the vicinity of Behring's Straits, that the natives of those regions are always seized with superstitious fear when they see this strange denizen of the Ocean.

During a voyage to Greenland, Scoresby relates that he saw a large number of NARWHALS swimming near the vessel in shoals of from fifteen to twenty. Most of these were males, which were easily recognized by their great tusks. They seemed to play about with great pleasure, and nothing could be more amusing than to see them bound out of the water, dive and return to the surface, raising their formidable tusks out of the water like a soldier presenting arms. During these evolutions they made a strange noise with their mouths, a sort of gurgling like that of liquid flowing from a bottle. Most of them followed the ship, impelled by curiosity. The transparency of the sea enabled them to be seen sliding under the keel of the vessel and playing about the rudder.

Orcadae.

These CETACEA, like the preceding, have an obtuse and rounded head; their teeth vary in size and number; they have a dorsal fin and long pectoral fins; their vertebrae are more or less united.

This family comprises three principal genera:—

1. The *Orc* with massive head, thick lower jaw armed with numerous and powerful teeth;

2. The GLOBICEPHALUS with a swollen head, teeth comparatively small, situated in the front part of the jaws, with very long pectoral fins and a sternum in three parts ;

3. The GRAMPUS whose dorsal fin is short and situated further back than in the two other genera. The teeth in the upper jaw are deciduous while those in the lower jaw are confined to the short symphysis of the latter.

Eight species of ORCS, twelve of GLOBICEPHALI and five of GRAMPUSES have been described.

ORC, (ORCA, Wagler)

Synonyms :—*Delphinus*, Linn.

Grampus, Fabr.

Phocaena, Cuv.

The ORCS are probably the only animals which attack and kill the large whalebone whales. It has been noticed that, except when pressed by hunger, they prefer to pursue the young ones. Their jaws are very massive and are armed with large and strong conical teeth which, in this respect, resemble those of the CACHALOT (*Physeter macrocephalus*, Linn.)

ORCA GLADIATOR, Gray.

Synonyms :—*Grampus orca*, Fabr.

Delphinus orca, Linn.

Phocaena orca, F. Cuvier.

This animal, a denizen of the North Atlantic Ocean and its adjoining seas, is called *Epaulard* by the French, *Gibbar* by the French-Canadians and Acadians, *Killer* by the English, *Thrasher* by the Gaspé fishermen, &c. It is the most widely known species. It is remarkable for its ferocity and voracious instincts. Eschricht relates that it has been seen to swallow four PORPOISES (*Phocaena communis*, F. Cuvier,) and he adds that in the stomach of one of these DELPHINOIDEA were found the remains of thirteen (*sic*) Porpoises and of fourteen (!) seals, (*Quoted by Mr. W. N. Lockington*). The ORCA GLADIATOR has a black back and white belly. The dorsal fin somewhat resembles a dart. Its muzzle is short and rounded, its lower jaw is wider and shorter than the upper. It has forty-four teeth, twenty-two above

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and twenty-two below, which are large, strong, conical and of somewhat crooked. The dorsal fin, near the middle of the back, measures about four feet in height; the pectoral fins are large and oval; the crescent-shaped tail is thick and strong. This animal is quite common all along the North shore of the Saint Lawrence. We came across them several times between Betsiamis and Pointe aux Esquimaux, during our voyage of exploration. It is no uncommon occurrence to see two or three at a time following each other in single file, their combined movements conveying to the looker on the impression of an enormous sea-serpent. This strong and lively animal is difficult to catch, and yields comparatively little oil. It is excessively voracious and exclusively carnivorous; it prefers for food the larger fishes, such as cod, halibut, ray, turbot, &c., &c., the smaller cetacea and seals. The oil obtained from it is of excellent quality.

GLOBICEPHALUS, Less.

Synonyms:—*Delphinus*, Linn.

Phocaena, F. Cuvier.

Its general characteristics have been given above. The most common species of this genus is the

Globicephalus melas, Less.

Synonyms:—*Delphinus deductor*, Scoresby.

Phocaena globiceps, F. Cuvier.

This cetacean is remarkable for its short and rounded head, owing to which the English fishermen have called it the *Bottle-head*. It is the *Ca'ing Whale* of Scoresby, the *Dauphin conducteur* of the French, the *Howling Whale* of the Anglo-American whalers. It inhabits the North Atlantic Ocean in the vicinity of Iceland. Its pectoral fins are one-fourth the total length of the animal. It has only five or six small teeth on each side and in each jaw. All the species of this genus keep together in large schools.

GRAMPUS, Gray.

Synonyms:—*Phocaena*, F. Cuvier.

Delphinus, Linn.

The species of this genus are confounded with the Orcs which they resemble in shape and general appearance but from which they

greatly differ by the small number and development of their teeth. Their pectoral fins are small; the dorsal fin is low and situated far back.

GREY GRAMPUS, (*Grampus Griseus*, Gray.)

Synonyms:—*Phocaena Griseus*, F. Cuvier.

Delphinus Griseus, D'Orb.

These CETACEANS have about the same characteristics as those of the genus. They differ from the ORCS and GLOBICEPHALI by having no teeth in the upper jaw when they are full-grown and having only from three to seven in the lower jaw.

The GRAMPUS is a denizen of the Northern parts of both sides of the Atlantic Ocean. It is also met with in the vicinity of Iceland, Greenland &c. Its length appears to be about thirteen feet. It is but little sought after by whalers.

DOLPHINS (*Delphinidae*.)

This is the most numerous family of the CETACEA. The fore-part of the head projects like a beak and the jaws are provided with numerous conical teeth. From sixty to seventy different species, more or less known and characterized, have been described.

The PORPOISE (*Phocaena*, F. Cuvier.)

Synonyms:—*Delphinus*, Linn.

Grampus, Gray.

Phocaena, G. Cuvier.

PORPOISES differ from the animals mentioned above by their short and rounded snout, which is not prolonged into a beak and by their numerous teeth irregularly set in each jaw. They have but one dorsal fin.

The COMMON PORPOISE (*Phocaena communis*, F. Cuv.)

Synonyms:—*Delphinus communis*, Linn.

Delphinus phocaena, Desm.

Phocaena vulgaris, DeKay.

It is the smallest of all cetaceans, its length not exceeding four or five feet. The name *Sea-hog* is given to it on account of the quantity of fat which lies under the skin; PORPOISE comes from the words *porc-poisson*. MARSOVIN comes from the German words *Meer*, sea and *Schwein*, hog.

The French-Canadians and Acadians call it *Poursil* or *Foursille*, while they give the name of *Marsouin* (porpoise) to the BELUGA or DELPHINOPTERA, already mentioned above. This cetacean is black and white underneath. It is well known to all who inhabit the Lower St. Lawrence and the shores of the Gulf.

The STRIPED PORPOISE, (*Phocaena lineata*, Cope.)

This species is also found in the Atlantic. It is easily distinguished by a dark brown stripe running along the sides of the body and dividing the black from the white underneath.

The ZIPHÜDAE.

These animals were for a long time known only in a fossil state, but for some years several genera have been found, among which we may mention the

Hyperoodon with a body like that of a Dolphin, but the beak has around its edges a high crest in the shape of long and vertical ridges

developed on the upper maxillaries in front of the blow-hole. All the cervical vertebrae are united. They have two small teeth in the lower jaw. The palate is covered with small bony protuberances.

The only species of this genus inhabits the North Atlantic and adjacent bays and seas; it is hunted for its oil, which is said to be equal to that of the CACHALOT.

When young the forepart of the head forms a kind of beak which becomes less and less prominent in the full-grown animals as their immense bony crest is developed, which in the end gives the *Hyperoodon* the appearance of a valise.

Until quite recently the young one was considered to be a different species from the full-grown one, an error which was due to the change which takes place in the outward appearance of the animal as it grows older.

CACHALOTS (*Physeteridae*.)

This family of *Odontoceti* or *Toothed Whales* contains but two or three species distinguished by their cervical vertebrae being united ; by their having teeth only in the lower jaw ; by their ribs being connected with the sternum by cartilages and by a skull strangely asymmetrical

The CACHALOT (*Physeter macrocephalus*, Linn.)

This whale, called the *Sperm-Whale*, is not only the largest and best known of the *Physeteridae*, but it is also the largest after the *Whalebone Whales*. The length of the full-grown male sometimes reaches from eighty to eighty-four feet, and individuals of seventy feet in length have not unfrequently been caught.

Some have been taken which were forty-eight feet in circumference. The enormous head, shaped like a somewhat flattened cylinder and truncated in front, forms about one-third of the entire bulk of the creature. The teeth which are wanting or rudimentary in the upper jaw, are well developed in the lower. In the upper part of the head, divided into large cavities lined with and separated from each other by cartilage is found the oil called cetine and improperly termed spermaceti ; the *blanc de baleine* of the French. It would, however, be incorrect to look upon the cetine as confined to the head of the CACHALOT : it is, on the contrary, distributed over all parts of the animal's body.

The *Sperm-Whale*, unlike the whales proper, has a single blow-hole, inclining towards the left side of the head, where it ends near the forepart of the muzzle. Another peculiarity consists in the left eye being much smaller than the other and sometimes even almost entirely wasted away. The CACHALOT has a dorsal fin, the pectoral fins are small as compared with the size of its body. The skin, smooth to the touch, is blackish above and whitish underneath. *Sperm-whales* travel in shoals of from two to three hundred, under the leadership of a male which precedes the herd and gives the signal of battle or of flight. The cry of these animals, or rather the noise of their blowing, at such times resembles the sound of a bell. The female brings forth one calf at a birth and is strongly attached to her young.

CACHALOTS have been seen fighting together with fury and striving to seize each other by the lower jaw. It has been ascertained

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that this species can remain twenty minutes without breathing, and that it travels at the rate of between eight and ten miles an hour. The CACHALOT is sought for its oil ; it yields much less than the common whale, but it furnishes the cetine or spermaceti already mentioned and amber-gris. The origin of this latter substance has given rise to much discussion, but the most prevalent opinion now is that amber-gris is a morbid concretion formed in the intestines of the *Physeter macrocephalus*, Linn.

This Whale inhabits all parts of the Ocean except the Arctic seas. Full-grown ones have been caught from 56° South latitude to 56° 12' North latitude. But it is more frequently found in the Southern than in the narrower Northern seas.

BALAENOIDEA or *Whale-bone whales*.

The natural history of the whale is as yet but imperfectly known. Owing to the difficulty experienced in directly observing the aquatic mammals, much uncertainty will always exist upon several important parts of their structure. Certain portions of their organism, which naturalists have been able to examine more closely, present very remarkable peculiarities.

The eyes of the whale, as compared with the size of the body, are very small and the distance at which they are placed the one from the other, make it impossible for the animal to see the same object with both eyes at the same time. Its sight is, however, very piercing and it is able to descry objects at a great distance under water. The ears are not apparent externally ; the organ of hearing is limited to an orifice so small as to be almost invisible. The olfactory organ is distinctly developed. The sense of smell, according to Hunter and Lalande, resides in the blow-holes or respiratory openings common to all the spouting whales. The blow-holes are about sixteen feet from its anterior extremity. As to whether the whale, in spouting, really ejects water from the blow-holes, the question is still under discussion. Still, those naturalists who have most carefully studied these animals, Scoresby, among others, who witnessed the capture of more than three hundred of them, affirm that the jet expelled is not of water but of steam, which, condensing as soon as it comes in contact with the cold air, falls in the shape of fine spray. Like all the CETACEA, the whale is viviparous : the female has but one young at a time, which she suckles, the milk having, it is said, the taste of cow's-milk. The young at birth measure about ten feet to twelve in length. The

period of gestation seems to be from 10 to 12 months. The immense mouth of the whales is devoid of teeth. Their place on either side of the upper jaw is supplied by horny plates, fibrous in texture and extremely elastic, with sharpened edges. These plates or *laminae*, which attain to a length of eight, ten and even twelve feet, are closely serried like the teeth of a comb, and number between five and seven hundred.

They are known to commerce as baleen or whalebone. The average weight of each plate is seven pounds and that of the whole from four thousand two hundred to four thousand nine hundred pounds or a little over two tons. The whalebone of commerce is prepared by being steeped for twelve hours in boiling water, which renders it soft and fit to be worked. Its relative value is estimated by its greater or lesser flexibility, tenacity, compactness and lightness. It is divided into quadrangular rods for the ribs of umbrellas, parasols, &c., &c. The lower jaw of the whale is devoid alike of teeth and of whalebone. The structure of the mouth prevents the animal from swallowing creatures of any but the very smallest size. The mouth, on opening, is filled with a column of water upon which the whalebone fringe acts as a strainer, retaining and crushing the smaller fishes and marine mollusca, &c. The whale also feeds upon thousands of small fry, such as whiting, herring, mackerel, &c., which it reduces into pulp so as to be able to swallow them. It chases the innumerable shoals of these fishes in their various periodical migrations.

In these CETACEA the nasal chambers communicate with the atmosphere by two openings called blow-holes situated on top of the head. The skull is very large in proportion to the body; the upper jaw is very long and very narrow. Notwithstanding their great size and large mouth, Whalebone Wales feed only on small marine animals, such as medusae, crustacea, and small molluscs which abound in the North Atlantic Ocean and adjacent seas. They are distinguished from other members of the order of CETACEA by their having no teeth whatever. They have teeth at first, but these disappear before the foetal life is ended and are replaced by parallel laminae of whalebone.

The genus BALAENOIDEA is divided into two families: *Balaenopteridae* and *Balaenidae*.

The BALAENOPTERIDAE is long and spindle-shaped, with only four digits; on the cervical vertebrae a dorsal fin of an adipose nature. The baleen are generally wrinkled. (The true *Balaenoptera* Cope.) of the North Atlantic has a dorsal fin and is about the size of *Balaenoptera longimana*, Gray. Dr. Gray as denizen

The same author has described the MEGAPTERA. Although the MEGAPTERA BACKS (*Megaptera*, Cope) have an osseous structure, they resemble one another. I consider them as all belonging to the same specific name of *Megaptera versabilis*.

Synonymy

This is the *Humpback* whalers, the *Rorqual* of from sixty to seventy metres. Its head that of the right whale, with two blow-holes to the muzzle, and pectoral fins and lobes. The outline of the head and the size and form placed on the entire length of the lower jaw and a certain head united to cluster. Its peculiar shape, many whaler can see. The but the two sexes differ in individuals measure

BALAENOPTERIDAE.

The BALAENOPTERA or RORQUALS have a rather small head; the body is long and spindle-shaped; the whalebones are short and broad; only four digits; one radius and an ulna longer than the humerus; the cervical vertebrae are not united. Most of them have a dorsal fin of an adipose nature. The throat and the front part of the belly are generally wrinkled longitudinally. To this family, apart from the true *Balaenoptera*, belong the SCRAG-WHALE (*Agaphelus gibbosus*, Cope.) of the North Atlantic, which has whitish whalebones with no dorsal fin and is about fifty feet in length, and the HUMP-BACK (*Megaptera longimana*, Gray), besides three other *Megaptera* mentioned by Dr. Gray as denizens of the East shores of the Atlantic.

The same author counts no less than sixteen species of BALAENOPTERA. Although authors have described several species of HUMP-BACKS (*Megaptera*, Cope) according to certain peculiarities of their osseous structure, their habits and general shape, these animals resemble one another to such an extent that it has been decided to consider them as all constituting one species to which Cope has given the specific name of *versabilis*, whence comes the name of the species: *Megaptera versabilis*, Cope.

Synonyms:—*Balaena Gibbosa*, Cuv.

Megaptera longimana, Cope.

This is the *Hump back* or *Hunch back whale* of the Anglo Saxon whalers, the *Rorqual longimana* of recent authors. It attains a length of from sixty to seventy feet. Brehm gives it from twenty six to thirty metres. Its body is rounder and thicker in proportion than that of the right whale, the outline of the head lowers from the blow-holes to the muzzle, the lower jaw is rounded and projecting, the pectoral fins and lobes of the caudal fin are considerably developed and the outline of the back is broken by a protuberance of variable size and form placed at a distance from the tail equal to one-fourth of the entire length of the animal. Another protuberance under the lower jaw and a certain number of other excrescences on top of the head united to clusters of barnacles, acorn-shells, &c., together with its peculiar shape, make it one of the most deformed animals which the whaler can see. The females are about the same size as the male, but the two sexes differ greatly in shape and colour. Full-grown individuals measure on an average from forty eight to fifty two feet

in length. In 1871 one was killed which was seventy five feet long and whose blubber yielded seventy three gallons of oil. The pectoral fin of one animal forty eight feet in length was thirteen feet long and its caudal fin was eighteen feet from the extremity of one lobe to that of the other. The whale bone is of inferior quality, the longest not exceeding two feet nine inches. The colour is black slightly mottled with white or grey underneath. Some have been taken which were pure white under the fins and belly as well as underneath the posterior and on the top of the hump. This CETACEAN is infested with parasites, barnacles, sometimes three inches in diameter, and whale lice, (*Cyamus ceti* of authors,) which attach themselves to the skin, about the head and pectoral fins, especially in the young ones. Although this whale is found in every ocean, in all seasons and of every age, it has been observed that it goes periodically to the inland seas to bring forth its young and that it migrates in large numbers from tropical regions to cold climates, where it remains during the Summer heats and returns to the warmer regions of the ocean for the Winter months. The irregular progress of this whale, the frequent oscillations of its body while in movement, and the way it turns its caudal fin in diving, enable it to be recognized at a long distance. The number of jets of spray which it spouts when it returns to the surface of the sea varies from one to twenty or twenty-one in succession. During the mating season, the extraordinary actions of these marine monsters are very comical. They swim from side to side, striking themselves alternately with their long pectoral fins. The noise of these blows is heard at a distance of several miles. They leap so as to be almost entirely out of water. When suckling its young, the female turns on its side and raises the posterior part of its body out of the water.

Under the throat of the HUMP-BACK WHALE, (*Macaptera*, Cope,) there are from twenty-one to twenty-six folds, each of which is from four to six inches wide. Some of these folds cross each other or end near the pectoral fins, while the others run further back. It is thought that these folds in the throat of this whale and other *Rorquals*, by their expansion and contraction, allow the stomach to dilate and contract according to its contents.

The SULPHUR-BOTTOM WHALE (*Sibbaldius sulfureus*, Cope) seems to inhabit the Pacific Ocean. But the SILVER-BOTTOM of the Atlantic Ocean, described by Professor Turner, must greatly resemble it. The latter has from time to time been stranded on the coast of Great Britain. A female, seventy-eight feet long, had three hundred and seventy whalebone plates on each side of the mouth, the largest

measuring a foot and a half at the base with a height of only three feet. The skin, which was iron gray on top and silver white underneath, was very thin everywhere, compared to that of the RIGHT WHALE (*Balaena mysticetus*, Linn.), not being more than one-fifth of an inch in thickness.

The *Megaptera* have no dorsal fin which, at first sight, distinguishes them from the following which have it :

The layer of blubber with which the back and sides are enveloped is not more than six or eight inches in thickness. Between three hundred and two thousand four hundred gallons of oil are obtained from this whale, according to the age and size of the animal. The weapon used in capturing this whale, as well as the Common whale, is the harpoon. HUMP-BACK WHALES are still pretty common in the Gulf of St. Lawrence, from the end of May to the close of Autumn, and they are frequently seen, followed each by a calf from ten to twelve feet long. This species of whale is said to retire during the Winter towards the South-Eastern coasts of the United States.

This whale is the commonest of the *Mysticeti* or *Toothless whales*. It is met with in deep water in nearly every sea. Its fins are three feet wide and from twelve to fifteen feet long, whence its name *Longimana*. Its tail is from eighteen to twenty feet wide. It differs greatly in appearance from the other *Balaenoptera*. Its body is short and thick, the fore-part being very thick while the after part ends in a comparatively slender tail. Its lower jaw is longer and wider than the upper. At a distance from the tail of about one-fourth of the animal's entire length, there is a kind of fin consisting almost entirely of adipose tissue, from which circumstance it derives its name of *Megaptera*. In the middle of the chin and near the shoulders there are also fatty excrescences of various sizes and shapes. Finally, the back is covered with irregular lumps varying in size from that of a marble to that of a fist. From the side of the lower jaw there are folds about four inches wide, running along the neck as far as the umbilicus. These folds enable the animals to open their mouths very wide and also help those, which have not enough blubber to render them specifically lighter than water, to rise and keep themselves on the surface. When they dilate their folds, the body becomes more voluminous, and the animal reascends to the surface of the sea ; if it wishes to descend, it contracts them, and so loses its volume and becomes specifically heavier than water.

The colour of the *Megaptera* varies very much. As a rule the back is black, and the sides and belly white, mottled with grey with black stripes. The fins and tail vary from pure white to jet-black. Their fins also differ in shape; sometimes they are long and pointed, at other times they are short and thick. The tail is generally crescent shaped, but some individuals have been seen with short tails cut square at the end.

Few species of whales are seen in greater numbers than this one in the Northern seas. It is remarkable for the rapidity of its movements. In swimming, it bends its body right up and then straightens it, thereby giving it an undulatory movement. It turns in the water and sometimes swims on its back, sometimes on its side and belly. It displays great agility in its native element and seems to control its movements as much as a bird does in the air.

When this cetacean fills its enormous lungs with air, it throws out at once from six to twenty times in succession a double column of spray to a height of from five to eighteen feet, and which is denser when the temperature is low. Its food consists chiefly of small fish and crustacea.

Although it has a considerable commercial value, whalers do not esteem it as much as the *Right* or *Greenland* whale as its blubber contains much less oil and its whalebones are shorter and yield less than the latter.

The NORTHERN RORQUAL (*Balaenoptera boops*, Flem.)

Synonyms:—*Balaenoptera physalis*, Lac.

Balaena pyhsalis, Cuv.

Balaena musculus, Linn.

The English call it the *Razor-backed whale*. It is one of the largest whales, the *Silver bottom* and *Sulphur-bottom* alone being longer. It differs from the latter by its muzzle, being more pointed and contracting rapidly to the end, instead of ending in a slight curve; by its fins, which are shorter in comparison with the size of the body; by its whale-bones being shorter and narrower, slate coloured or with yellow, white or brown stripes, instead of a deep black and finally by its smaller size. Some have been killed which were over sixty-seven feet long, but its length probably does not

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exceed seventy feet. It is black above and white underneath. Its blubber is not as thick as that of the *Silver-bottom* and it consequently yields less oil.

The *Razor-back* is an Atlantic whale and in the same Ocean is found the **PIKE-WHALE** (*Balaenoptera rostrata*, Gray) which is from twenty-five to thirty feet long.

The *Sulphur bottom* is frequently spoken of amongst the dwellers along the shores of the Gulf. Captain Campbell of the *Alaska* pronounced the whale which we saw on the 15th July 1885, as we approached the shores of Gaspé, to be a *Sulphur bottom*. The *Balaenoptera* which the Anglo-Americans call the *Sulphur-bottom* is the *Sibbaldius sulfureus* Cope, which is the largest of all whales and probably, as the authors say, the largest of animals which now exist or which formerly existed. The *Sulphur-bottom* has been seen only in the Pacific Ocean, especially on the coast of Upper and Lower California. It is not improbable that it has been confounded with the *Silver-bottom*, or that Captain Campbell who gave me the information, had in a moment of absent-mindedness taken the Gulf of St-Lawrence for the Great Ocean where he had hunted whales for thirty years.

BALAENIDAE.

This family comprises the whales proper, which are distinguished from the *Balaenoptera* and their allies by the great size and the outline of their heads, by the absence of dorsal fins and of folds beneath the throat and belly, by the bones of the arm being short and strong, by their cervical vertebrae which are united together and by their long and thin whale-bones.

Dr. Gray counts fourteen species or varieties :

The **RIGHT-WHALE** (*Balaena mysticetus*, Linn.)

Synonym :—*Eubalaena cisarctica*, Cope.

This is also called the *Bow-head whale*, *Common whale*, *True whale* and *Greenland whale*

The name of *Bow-head* comes from the arched outline of its huge head. It is also called the *Polar whale* on account of its habitat. It has been the most persistently sought after for a very long while on

the Northern Shores of the old and new continents because it is the most valuable of cetaceans. Although it is not the largest, fifty feet being a little more than its average length, it yields much more oil while its whale-bones are longer, more numerous and of better quality, a large *Right whale* yielding two hundred and seventy-five barrels of oil and a ton and three quarters of whale-bone. Owing to its convex jaws, its mouth contains whale-bones over fourteen feet long. The number of plates on each side varies from three hundred and thirty to three hundred and seventy. The largest plates are a foot and more in width and the fringe of loose fibres along their inner edge is from one to two feet long. It has been found that the blubber of a whale forty-seven feet long was eleven inches thick on an average and was sixteen inches at the thickest part; the blow holes of the same animal were one foot long; the black skin on the back was an inch thick and the lobes of the tail measured nineteen feet from one extremity to another.

As regards its shape, the whale is the least elegant of mammals. Its short and thickset figure with a head one third of its total length and exceeding the remainder of the body in height and thickness, its enormous mouth with curved outline extending far beyond the blow-holes, its small eyes, its short and heavy pectoral fins, present to the eye but an unshapely mass of flesh. Although its eyes appear small they are four times as large as those of the ox and are situated about a foot behind the extremity of the angle of the mouth. The opening of the ears is not more than one fourth of an inch in diameter and it frequently happens that this opening is so small that it is difficult to perceive it. Small or average-sized *Right whales* are black while the largest and oldest are brown. All are more or less spotted with white underneath, especially on the throat and near the fins.

These whales are less infested with parasite crustacea than are the *Rorquals* or *Balaenoptera*. However, *Whale-lice* (*Cyamus*), are found on the head and fins which are of a different species from those of the *megaptera* or *hump-back*. When it pursues its prey which consists of small crustacea or PTEROPODOUS MOLLUSCS (*Olio borealis*, Ferussac) which exist in great numbers in the Arctic seas, the *right whale* swims open-mouthed near the surface of the water until it has collected a sufficient quantity of food for one mouthful. Notwithstanding the size of the animal, its throat is very small, not being much more than two inches in diameter inside. The whale then raises its head allowing the water to run out through the fringe of

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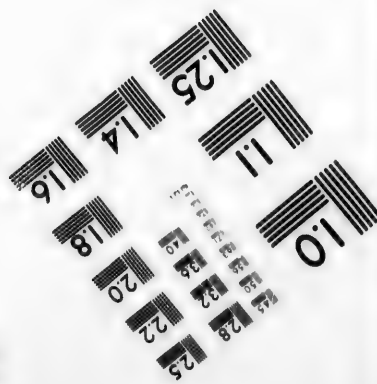
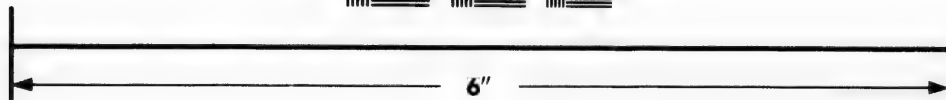
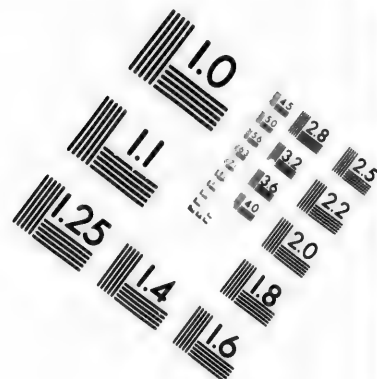
fibres around the inside of the whalebone and by means of the huge mass of flesh and fat which constitutes its tongue, it collects the minute animals within its mouth and pushes them towards its throat. It is thus that millions of beings so small that their structure can only be studied with the microscope make one mouthful. One may form an idea of the innumerable multitude of these *entomostraca* by recollecting that, without perceptibly decreasing in number, they suffice to feed the great herds of *Mysteceti* and the myriads of fish which inhabit the Ocean.

When the whale dives it remains from ten to twenty minutes under water and it requires from a minute and a half to two minutes to oxygenate its blood when it returns to the surface, during which time it blows from six to nine times.

It is not known to what depth it can go, as it is generally taken in places where the sea is only from fifty to one hundred fathoms deep. The *Bow-head* resembles the *Hump-back* in the irregularity of its movements but the length of time it passes on the surface or beneath the water is far from being the same. When it swims on the surface only the top of its head with the blow-holes is seen, and the curvature of the back half-way between the head and the tail.

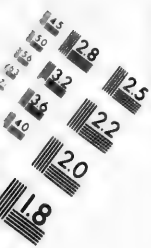
The baleen consists of hair or fibres agglutinated together. The name *whalebone* is therefore incorrectly given to the baleen of the *Mysteceti*, for there is no bony substance whatever in it.

The RIGHT WHALE feeds chiefly on crustacea which are about the size of house-flies and which swarm in the Northern seas, especially when the temperature of the water varies from 34° to 35° Fahrenheit, the ordinary temperature amidst the ice being 29° Fahrenheit and the colour of the water changing from dark brown to olive green and light blue; blue water is the coldest. Teeth would be perfectly useless to the whale in feeding on these small crustacea; what it requires is something which allows the water to escape and retains the small animals which it devours. Aristotle was the first to observe this peculiarity. He said: "*Mysticetus etiam pilos in ore intrus habet vice dentium, suis selis similes*," i. e. "Instead of teeth the whale has hair inside its mouth similar to hog bristles." Professor Owens remarks in this connection that a person looking into the mouth of a whale stranded on the shore, would see the cavity of the palate all covered with coarse hair. There is no doubt that the



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Balaenoptera which frequent the Mediterranean must have suggested the above comparison to the Father of Natural History.

The number of the plates of baleen varies from two hundred and fifty to three hundred and fifty on each side of the mouth. In 1877 the crew of a whaler commanded by Captain David Gray found in a whale they had killed, two hundred and eighty-six plates on the left and two hundred and eighty-nine on the right side. The plates of baleen are divided from each other in the middle by a gum three fourths of an inch thick, decreasing to a quarter of an inch at the two extremities, that is at the muzzle and throat. The gum is always white and the substance of which it is made resembles a horse's hoof but is softer; it is easily cut with a knife and broken with the hand; it is tasteless.

The baleen which represents the palate is covered on the inside edge with hair to fill up the interstices between the plates and prevent the small animals drawn into the mouth from going back into the sea. Not only does the baleen fill up the mouth when it is shut but it is so arranged as to extend from the upper jaw to the lower one when the mouth is open. When the mouth is closed, the plates bend at their lower ends near the throat on account of their shortness at that place.

The whale has no more muscular control over its baleen than other animals have over their teeth. When it opens its mouth to eat, the whalebones, freed by the lowering of the under, jaw project forwards and downwards so as to completely fill the mouth and the small marine animals which enter with the water are retained by the hairs of the whalebone whose points are directed backwards towards the throat and the under jaw in closing, seizes and carries these animals to the back of the mouth.

The following are the dimensions of a whale considered as a good specimen of the *Right Whale*:

Length from muzzle to tail.....	47 feet 0 inches.
Length of head to eyes.....	17 " 8 "
Width of body between pectoral fins.....	11 " 0 "
Width of head through maxillary bones.....	9 " 3 "
Width of lip including jaw-bone.....	5 " 5 "

Opening of mouth	10	"	8	"
Width of tail	20	"	0	"
Length of middle whale-bones	10	"	1	"

These measures are all the more interesting that the information they contain was wanting up to 1877.

Whale-fishing was practised as far back as the ninth century by the Normans and Scandinavians. Towards the fifteenth century the Basques held the monopoly of it in Europe, employing as many as from fifty to sixty vessels and from nine to ten thousand sailors every year. The Dutch, in the sixteenth century, engaged in whaling expeditions with most important results. In the space of forty-six years they captured thirty-two thousand whales, which brought them in from seventy-five to eighty millions of dollars.

Whaling appears to have been long since given up by the French and even partially abandoned by the English; from the beginning of the nineteenth century it has fallen almost exclusively into the hands of the inhabitants of the New England States. In 1852, the United States whalers had seven hundred and fifty vessels and twenty-five thousand sailors engaged in the fisheries. The Nantucket whalers still captured a large number of whales some fifty years since. They are becoming scarcer every day in the waters of the Gulf and River St. Lawrence.

In 1845, three **RIGHT WHALES** were seen between the Saguenay and Kamouraska. A young one was killed, which yielded twelve hundred gallons of oil; an older one, killed a little later on, yielded four thousand two hundred gallons.

Almost from time immemorial whale-fishing has been carried on in Canadian waters with extraordinary activity and has yielded very large profits. The Gaspé merchants formerly employed several schooners every summer in this important branch of industry, the hardships and perils of which were amply compensated for by the profit reaped from it.

APPENDIX V.

BOTANY.

List of plants gathered by D. N. Saint-Cyr, on the North Shore, from St. Paul's Bay to Ouatchechou, and in the islands of Mingan, Anticosti and Grand Mecatina, during the Summer of 1882 and the month of July, 1883, during the leisure hours of his two trips to the Lower St. Lawrence and the Gulf.

RANUNCULACEÆ.

Olematis verticillaris, DC. Saint Paul's Bay, 2nd June, 1882.

Anemone parviflora, Michx. Island of Anticosti, 4th August, 1882.

A. pennsylvanica, Linn. Esquimaux Island (Mingan), 23rd July, 1882.

Thalictrum Cornuti, Linn. Esquimaux Island (Mingan), 25th July, 1882.

T. Alpinum, Linn. Saint Charles Island (Mingan), 23rd July, 1882. Island of Anticosti, 8th August, 1882.

T. dioicum, Linn. Sainte Geneviève Island (Mingan), 16th and 17th July, 1882.

Ranunculus cymbalaria, Pursh. Hunting Island (Mingan), 21st July, 1882; Ouatchechou, 7th July, 1882.

R. sceleratus, Linn. Tadousac, 11th September, 1882.

* The following note could not be inserted in the edition of this report printed in 1886.

Since this humble work has been completed and sent to the Honorable Commissioner of Crown Lands, the author has had the good fortune to be able to submit his specimens of phanerogamous plants to the examination of a distinguished botanist, Professor John Macoun, M. A., F. L. S., F. R. S. C., the botanist of the Geological and Natural History Survey of Canada. This gentleman whose extensive knowledge of Botany is universally admitted, has for long time been in charge of the immense herbarium of the Survey under the intelligent superintendence of Dr. Selwyn. For over forty years during which Professor Macoun has devoted his whole time to the study of plants, he has given his attention chiefly to those of Canada.

As I had long been desirous of submitting my collection of plants of the Province of Quebec to the examination of a competent person, I applied to Professor Macoun, who kindly granted my request and was good enough to undertake the tedious and laborious task of examining my specimens, one by one, and of classifying them according to the best authors. His admirable catalogue of Canadian plants, the two first parts of which have been published, have also been of great use to me. This catalogue which is very well made should be in the library of every one who really desires to study the Flora of this country.

I beg to tender my most sincere thanks to Professor Macoun for the trouble he has taken in naming nearly one thousand botanical specimens for me and in making the classification easier by explanatory notes and judicious remarks elucidating obscure or difficult questions in connection with the Flora of the Province of Quebec.

R. acris, Linn. River Mingan, 5th July, 1882; Anticosti, 4th August, 1882.

R. flammula, Linn. *Var reptans*, Meyer. River Mingan, 27th July, 1882.

R. pennsylvanicus, Linn. Mingan Islands, 30th July, 1882.

Caltha palustris, Linn. Mingan Islands, June and July, 1882.

Coptis trifolia, Salisb. Mingan Islands; Bay of Seven Islands, 20th July, 1882; Pointe des Monts, 3rd July, 1882.

Actaea spicata, var. *alba*, Michx. Pointe des Monts, 3rd July, 1885.

A. spicata var. *rubra*, Michx. Ouatchechou, July and August, 1882.

SARRACENIACEAE.

Sarracenia purpurea, Linn. Ouatchechou, 8th and 12th July, 1882.

FUMARIACEAE.

Corydalis glauca, Pursh. River Mingan, 16th August, 1882.

CRUCIFERAE.

Nasturtium palustre, DC. Ouatchechou, 10th July, 1882.

Cardamine rhomboidea, DC. Anticosti, 8th July, 1882.

Draba ramosissima, Desv. Mingan Island, 12th July, 1882.

D. arabisans, Michx. Ouatchechou, 9th August, 1882.

D. incana, Linn. Ouatchechou, 4th July, 1882.

D. glabriuscula, Linn. Mingan Island, 4th July, 1882.

D. alpina, Linn. Ouatchechou, 4th July, 1882.

Ochlearia tridactylis, Banks. Ouatchechou, 4th July, 1882.

Arabis Drummondii, Gray. Anticosti, 8th August, 1882.

Thlaspi arvense, Linn. Sheldrake, 23rd August 1882.

Oakile americana, Nutt. Harbor Island (Mingan), 30th July, 1882.

VIOLACEAE.

Viola blanda, Willd. Mingan Station, 22nd June, 1882.

V. palustris, Linn. Tadousac, 5th June, 1882.

V. cucullata, Aiton. Ouatchechou, 6th July, 1882.

V. rostrata, Pursh. Anticosti, 4th August, 1882.

V. Selkirkii, Mingan Harbor, 26th June, 1882.

DROSERACEAE.

Drosera rotundifolia, Linn. Ouatchechou, 6th July, 1882.

D. intermedia, Hayne, Ouatchechou, 6th July, 1882.

CARYOPHYLLACEAE.

Silene inflata, Smith, Thunder River, 18th August, 1882.

S. acaulis, Linn. Grand Isle (Mingan), 1st July, 1882; Grand Mécatina, 11th July, 1885.

Arenaria arctica, Steven, River Mingan, 29th July, 1882.

A. serpyllifolia, Linn., Grand Isle (Mingan), 31st July 1882.

A. stricta, Michx. Harbor Island (Mingan), 14th August, 1882.

A. groenlandica, Spreng., River Mingan, 30th July, 1882.

A. lateriflora, Linn. Grand Isle (Mingan), 31st July, 1882.

A. peploides, Linn. Sainte Geneviève Island (Mingan), 17th July, 1882.

Stellaria media, Smith, Anticosti, 5th August, 1882.

S. Longifolia, Muhl. Sainte Geneviève Island (Mingan), 17th July, 1885; Ouatchedhou, 5th July, 1882.

S. crassifolia, Ehrh. Ouatchechou, 10th July, 1882.

Oerastium vulgatum, Linn. Mingan Harbor, 15th August, 1882.

O. arvense, Linn. Ouatchechou, 10th July, 1882.

O. alpinum, Linn. Mingan Station, 26th June, 1882.

Sagina nodosa, E. Meyer, Pentecost River, 30th August, 1882.

PORTULACAEAE.

Claytonia caroliniana, Michx. Bay of Seven Islands, 13th June, 1882.

GERANIAOEAE.

Geranium robertianum, Linn. Anticosti, 5th August, 1882.

Oxalis acetosella, Linn. Sheldrake, 24th August, 1882.

O. stricta, Linn. Thunder River, 25th August, 1882.

RHAMNACEAE.

Rhamnus alnifolius, L'Her. Anticosti, 5th August, 1882.

SAPINDACEAE.

Acer spicatum, Lam. Anticosti, 5th August, 1882.

POLYGALACEAE.

Polygala, paucifolia, Willd. Ouatchechou, 12th July, 1882 ;
Anticosti, 8th August, 1882.

LEGUMINOSAE.

Trifolium procumbens, Linn. Thunder River, 10th August, 1882.

T. pratense, Linn. Sainte Geneviève Island (Mingan) 18th July, 1882.

Hedysarum boreale, Nutt. Anticosti, 12th August, 1882.

Vicia cracca, Linn. Grand Isle (Mingan), 31st July, 1882.

Lathyrus palustris, Linn. Saint-Charles Island (Mingan), 22nd July, 1882.

L. maritimus, Bigelow, Ouatchechou, 8th July, 1882; Anticosti, August, 1882.

ROSACEAE.

Prunus pennsylvanicus, Linn. Ouatchechou, 6th July, 1882.

Spiraea salicifolia, Linn. River Mingan, 25th June, 1882.

Dryas integrifolia, Wahl. Mingan Island (Mingan), 23rd June, 1882. Grand Mecatina, 12th July, 1885.

Geum rivale, Linn. Saint-Charles Island (Mingan), 22nd July, 1882.

Potentilla norvegica, Linn. Mingan Harbor, 20th July, 1882.

P. tridentata, Aiton, Ouatchechou, 6th July, 1882.

P. palustris, Scop. Harbor Island (Mingan), 14th August, 1882; Thunder River, 18th August, 1881.

Fragaria vesca, Linn. Ouatchechou, 7th June, 1882.

Dalibarda repens, Linn. Hunting Island (Mingan), 21st July, 1882.

Rubus chamaemorus, Linn. Grand Isle (Mingan), 1st July, 1882:

R. strigosus, Michx. Ouatchechou, 6th July, 1882.

R. canadensis, Linn. Harbor Island (Mingan), 25th June, 1882.

R. arcticus, Linn. Birch Islands (Mingan), 23rd June, 1882.

Rosa blanda, Ait. Anticosti, 5th August, 1882.

Amelanchier canadensis, Torr. and Gray, Ouatchechou, June, 1882; Mecatina, 12th July, 1885.

SAXIFRAGACEAE.

Ribes oxycanthoides, Linn. Ouatchechou, 7th July, 1882.

R. lacustre, Poiret, Mingan Islands, 20th July, 1882.

R. prostratum, L'Her. Mingan, 23rd July, 1882.

Farnassia parviflora, DC. Harbor Island (Mingan), 30th July, 1882.

Saxifraga oppositifolia, Linn. Saint Charles Island (Mingan), 22nd July, 1882.

S. aizoides, Linn. Sainte Geneviève Island (Mingan), 17th July, 1882.

S. caespitosa, Linn. Grand Island (Mingan), 1st July, 1882.

S. aizoon, Jacquin, Saint Charles Island (Mingan), 23rd July, 1882.

S. virginiensis, Michx. Saint Paul's Bay, 31st May, 1882; Tadoussac, 8th June, 1882.

Mitella nuda, Linn. Sainte Genevieve Island (Mingan), 16th July, 1882; Pointe des Monts, 3rd July, 1885.

CRASSULACEAE.

Sedum rhodiola, DC. Ouatchechou, 23rd June, 1882.

ONAGRACEAE.

Circaea alpina, Linn. Pentecost River, 3rd September, 1882.

Epilopium angustifolium, Linn. Pentecost River, 29th August, 1882.

E. latifolium, Linn. River Mingan, 29th July, 1882.

E. canescens, Linn. Pentecost River, 29th August, 1882.

E. palustre, Linn. Anticosti, 6th August, 1882.

OMBELLIFERAE.

Sanicula marylandica, Linn. Anticosti, 5th August, 1882.

Ligusticum scoticum, Linn. Ouatchechou, 30th July, 1882.

Heracleum lanatum, Linn. Parrot Island, July, 1885.

Oicuta maculata, Linn. Pentecost River, 20th August, 1882.

ARALIACEAE.

Aralia nudicaulis, Linn. Anticosti, 7th August, 1882.

CORNACEAE.

Cornus canadensis, Linn. Ouatchechou, 12th July, 1882.

C. suecica, Linn. Ouatchechou, 12th July, 1882.

C. stolonifera, Michx. Sainte-Geneviève Island, (Mingan), 17th July, 1882.

CAPRIFOLIACEAE.

Linnæa borealis, Gronov. Ouatchechou, 10th July, 1882.

Lonicera ciliata, Muhl. Harbour Island (Mingan), 25th June, 1882.

L. caerulea, Linn. Harbour Island (Mingan), 25th June, 1882.

Dierilla canadensis, Wild. Pentecost river, 30th June, 1882.

Sambucus pubens, Michx., var. *arborescens*, Torr et Gray, Pentecost river, 29th August, 1882.

Viburnum pauciflorum, Pylaie, River Mingan, 27th July, 1882.

RUBIACEAE.

Galium trifidum, Linn. Esquimaux Island (Mingan), 21st July, 1882.

G. triflorum, Michx. Anticosti, 6th August, 1882.

G. pusillum, Gray, Esquimaux Island, 21st July, 1882.

COMPOSITAE.

Aster alpinum, Hook, Gamache Bay (Anticosti), 24th June, 1882.

A. nemoralis, Aiton, River Sheldrake, 24th August, 1882.

A. puniceus, Linn. Pentecost River, 30th August, 1882.

A. (Diplopappus) umbellatus, Torr. and Gr. Lobster Bay, 29th August, 1882.

Solidago squarrosa, Muhl. Thunder River, 17th August, 1882.

Achillea millefolium, Linn. Mingan, 20th July, 1882.

Leucanthemum vulgare, Lam. Gamache Bay (Anticosti), 6th August, 1882.

Gnaphalium polycepalum, Michx. Gamache Bay (Anticosti), 5th August, 1882.

Antennaria alpina, Gaertn. Gamache Bay (Anticosti), 10th August, 1882.

A. margaritacea, R. Br. Pentecost River, 5th August, 1882.

Senecio vulgaris, Linn. River Sheldrake, 23rd August, 1882.

S. pseudo-arnica, Less. Harbor Island (Mingan), 25th June, 1882.

S. aureus, Linn. Magdalen Islands, 3rd June, 1884.

Leontodon autumnale, Linn. Thunder River, 19th June, 1882.

Nabalus albus, Hook. Pentecost River, 3rd June, 1882.

Taraxacum dens-leonis, Desf. Ouatchechou, 13th July, 1882.

Sonchus canadensis, Linn. Little Sheldrake River, 25th August, 1882.

LOBELIACEAE.

Lobelia inflata, Linn. Mingan Station, 29th July, 1882.

CAMPANULACEAE.

Campanula linifolia, Lam. Ouatchechou, 16th July, 1882; Gamache Bay (Anticosti), 16th July, 1882.

C. rotundifolia, Linn. Esquimaux Island (Mingan), 21st July, 1882.

ERICACEAE.

Vaccinium oxycoccus, Linn. Mingan, 17th July, 1882.

V. Vitis Idaea, Linn. Ouatchechou, 5th september 1882 ; Great Mécatina, 12th July, 1885.

V. pennsylvanicum, Linn. Ouatchechou, 6th July 1882.

V. canadense, Richard, Ouatchechou, 6th July, 1882.

Chiogenes hispidula, Torr & Gr. Mingan Islands, 25th June, 1882.

Andromeda pelifolia, Linn. Ouatchechou, 5th and 6th July, 1882.

Cassandra calyculata, Linn. Ouatchechou, 4th and 5th July, 1882.

Epigaea repens, Linn. Saint-Paul's Bay, 2nd June, 1882.

Arctostaphylos uva-ursi, Spreng. Saint-Paul's Bay, 25th June, 1882 ; Mingan Island, June and July, 1882.

A. alpina, Spreng. Mingan Islands, July, 1882 ; Great Mécatina, 12th July, 1885.

Kalmia angustifolia, Linn. Ouatchechou, 4th July, 1882.

K. glauca, Ait. Magdalen Islands, 3rd August, 1882 ; River Sheldrake, 24th 1884.

Rhodora canadensis, Linn. Ouatchechou, 6th July, 1882.

Ledum latifolium, Linn. Ouatchechou. 6th July, 1882.

L. palustre, Linn. var. *angustifolium*, Hoc. Ouatchechou, 6th July, 1882.

Loiseleuria procumbens, Desv. Mingan Islands, 6th July 1882.

PYROLACEAE.

Pyrola rotundifolia, Linn. Esquimaux Island (Mingan), 27th July, 1882 ; Sainte-Geneviève Island (Mingan), 18th July, 1882.

P. secunda, Linn. Esquimaux Island (Mingan), 27th July, 1882.

P. elliptica, Nutt. Esquimaux Island (Mingan), 27th July, 1882.

P. chlorantha, Swartz, Calcouleaux Island (Mingan), 21st July, 1882.

Moneses uniflora, Gray, Hunting Island (Mingan), 20th July, 1882.

Chimaphila umbellata, Nutt. Lobster Bay, 31st August, 1882.

PLANTAGINACEAE.

Plantago maritima, Linn. Anticosti, 6th August, 1882.

P. pauciflora, Pursh. Ouatchechou, 6th July, 1882.

PRIMULACEAE.

Primula farinosa, Linn. Mingan Islands, 23rd June, 1882; Great Mecatina, 12th July, 1885.

P. mistassinica, Michx. Mingan Islands, 28 June, 1882.

Androsace occidentalis, Pursh. Sainte-Geneviève Island (Mingan), 20th July, 1882.

A. septentrionalis, Linn. Sainte-Geneviève Island (Mingan), 20th July, 1882.

Trientalis americana, Pursh. Mingan Islands, 28th June, 1882; Pointe des Monts, 3rd July, 1885.

Lysimachia ciliata, Raf. Pentecost River, 30th August, 1882.

Glaux maritima, Linn. Ouatchechou, 14th July, 1882.

LENTIBULACEAE.

Pinguicula vulgaris, Linn. Mingan Islands, 25th June, 1882.

SCROFULARIACEAE.

Chelone glabra, Linn. Esquimaux Point (Mingan), 27th July, 1882.

Veronica americana, Schweinitz, Gamache Bay (Anticosti), 5th August 1881.

Euphrasia officinalis, Linn. Mingan Island (Mingan), 30th July, 1882.

Rhinanthus crista-galli. Gamache Bay (Anticosti), 7th August, 1882.

LABIATAE.

Galeopsis tetrahit, Linn. Gamache Bay (Anticosti), 4th August, 1882.

BORRAGINACEAE.

Mertensia maritima, Don. Cawee Islands, 17th July, 1882 ; Ouatchechou, 12th July, 1882.

DIAPENSIACEAE.

Diapensia lapponica, Linn. Mingan Islands, 23rd July, 1882.

GENTINEACEAE.

Halenia deflexa, Grisebach, Mingan Islands, 3rd July, 1882.

Menyanthes trifoliata, Linn. Mingan Islands, 25th June, 1882.

CHENOPODIACEAE.

Chenopodium album, Moq. Mingan Islands, 30th July, 1882.

Atriplex patula, Linn. Mingan Islands, 29th July, 1882.

Salicornia herbacea, Linn. Gamache Bay, (Anticosti), 8th August, 1882.

POLYGONACEAE.

Polygonum viviparum, Linn. Mingan Islands, July, 1882.

P. aviculare, Linn. Mingan Islands, 24th June, 1882.

P. scandens, Linn. Thunder River, 18th August, 1882.

P. sagittatum, Linn. Grand Isle (Mingan), 24th July, 1882.

Rumex salicifolius, Wein. Mingan Islands, 23rd July, 1882.

R. acetosella, Linn. River Sheldrake, 26th August, 1882.

ELEAGNACEAE.

Shepherdia canadensis, Nutt. Mingan Islands, 25th June, 1882.

SANTALACEAE.

Comandra umbellata, Nutt. Tadousac, June, 1884; Pointe des Monts, 3rd July, 1885; Mingan Islands, July, 1882.

C. livida, Rich. Tadoussac; Pointe des Monts, 3rd July, 1885.

EMPETRACEAE.

Empetrum nigrum, Linn. Ouatchechou, 23rd June, 1882; Great Mecatina, 12th July, 1885.

URTICACEAE.

Urtica gracilis, Ait. Harbour Island (Mingan), 20th July, 1882.

MYRICACEAE.

Myrica gale, Linn. Ouatchechou, July, 1882; Great Mecatina, 12th July, 1885.

BETULACEAE.

Betula papyracea, Ait. Mingan river, June, 1882.

B. pumila, Linn. Ouatchechou, July, 1882.

B. glandulosa, Michx. Mingan Islands, July, 1882; Great Mecatina, 13th July, 1885.

Alnus incana, Willd. Pentecost River, 29th August, 1882.

A. viridis, DC. Great Mecatina, 13th July, 1885.

SALICACEAE.

Salix candida, Wild. Mingan Islands, July, 1882.

S. humilis, Marshall, Seven Islands Bay, June, 1882.

S. vestita, Pursh. Mingan Islands, July, 1882; Great Mecatina, 12th July, 1885.

S. reticulata, Linn. Mingan Islands, July, 1882, Great Mecatina, 12th July, 1885.

Populus tremuloides, Michx. Mingan Islands, June, 1882.

P. balsamifera, Linn. Mingan Islands, June and July, 1882.

CONIFERAE.

Pinus strobus, Linn. Pentecost River, June, 1882.

P. banksiana, Lamb. Seven Islands Bay, June, 1882.

Abies nigra, Poir. Mingan Islands, June and July, 1882; Great Mecatina, 12th July 1885.

A. alba, Michx. Mingan Islands, June and July, 1882.

A. canadensis, Michx. Saint-Urbain (Charlevoix), June, 1882.

A. balsamea, Marshall, Mingan Islands, June, 1882; Ouatchechou, July, 1885; Great Mecatina, July, 1885.

Larix Americana, Michx. Ouatchechou, &c, June, 1882.

Thuja occidentalis, Linn. Tadoussac, June, 1882.

Juniperus communis, Linn. Mingan Islands, June and July, 1882; Great Mecatina, 12th July, 1885.

J. Sabina, Linn. var. *procumbens*, Pursh, Mingan Islands, June and July, 1882; Great Mecatina, June and July, 1882.

Taxus baccata, Linn. var. *canadensis*, Gray. Birch Islands (Mingan), 23rd June, 1882.

TYPHACEAE.

Sparganium simplex, Hudson, var. *genuinum*, Gray. Ouatchechou, 21st July, 1882.

NAIADACEAE.

Potamogeton perfoliatus, Linn. Rivers of the North shore of the Gulf of Saint-Lawrence, August and September, 1882.

P. pectinatus, Linn. Shore of Gulf of Saint-Lawrence, August and September, 1882.

P. filiformis, Linn. Shore of Gulf Saint-Lawrence, August and September, 1882.

ALISMACEAE.

Triglochin maritimum, Linn. Mingan Islands, 21st July, 1882.

Alisma plantago, Linn. var. *americanum*, Gray, River Saint Charles, August, 1882.

ORCHIDACEAE.

Habenaria hyperborea, R. Br. Harbour Island (Mingan), 30th August, 1882.

Habenaria dilatata, R. Br. Harbor Island (Mingan), 14th August, 1882.

H. rotundifolia, Richardson, Mingan Island, 29th July, 1882.

H. obtusata, Richardson, Saint Charles Island (Mingan), 22nd July, 1882.

H. psycodes, Gray, Harbor Island (Mingan), 16th August, 1882.

Spiranthes romanzoviana, Chamisso, Lobster Bay, 5th September, 1882.

S. gracilis, Bigelow, Little River Mingan, 24th August, 1882.

S. cernua, Richardson, Lobster Bay, 4th and 5th September, 1882.

Listera cordata, R. Br. Pentecost River, 30th August, 1882.

L. convallarioides, Hook, Quinn Island (Mingan), 27th July, 1882.

Calypso borealis, Salisb. Saint Paul's Bay, 1st June, 1882; Mingan Island, 23rd June, 1882.

Cypripedium acaule, Aiton, Ouatchechou, 5th July, 1882.

C. pubescens, Willd. Saint Charles Island (Mingan), 21st June, 1882.

IRIDACEAE.

Iris tridentata, Pursh. Saint Charles Island (Mingan), 21st July, 1882.

Sisyrinchium bermudiana, Michx. Anticosti, 2nd July, 1882.

LILIACEAE.

Zygadenus glaucus, Nutt, Anticosti, 5th August, 1882.

Tofieldia palustris, Hudson, Mingan Islands, July and August, 1882.

T. glutinosa, Willd. Mingan Islands, July and August, 1882.

Streptopus amplexifolius, DC. Mingan Islands, July, 1882.

S. roseus, Michx. Anticosti, 10th August, 1882.

Clintonia borealis, Raf. Mingan Islands, 27th July, 1882.

Smilacina stellata, Desf. Mingan River, 25th June, 1882.

S. trifolia, Desf. Mingan River, 25th June, 1882.

S. bifolia, Ker. Ouatchechou, 6th July, 1882.

JUNCAEAE.

Luzula spadicea, var. *parviflora*, Desv. Thunder River, August, 1882.

Juncus effusus, Linn. Pentecost River, August, 1882; Ragged Island, 4th September, 1882; Mingan Islands, 21st July, 1882.

J. balticus, Dethard. Mingan Islands, July and August, 1882.

J. bufonius, Linn. Thunder River, August, 1882.

CYPERACEAE.

Scirpus atrovirens, Muhl. Mingan, 20th July, 1882.

Eleocharis palustris, R. Br. Ouatchechou, 10th July, 1882.

E. acicularis, R. Br. Thunder River, 16th August, 1882.

Eriophorum virginicum, Linn. Ouatchechou, 10th July, 1882.

E. polystachion, Linn. Hunting Island (Mingan), 21st August, 1882.

E. vaginatum, Linn. Grande Isle (Mingan), 25th July, 1882.

E. alpinum, Linn. Saint Charles Island (Mingan) 23rd July, 1882.

Carex pauciflora, Lightfoot, Ouatchechou, July, 1882.

Carex polytrichoides, Muhl. Mingan River, July, 1882.

C. stipata, Muhl. Saguenay (Anse-à-l'eau), 25th June, 1884.

C. trisperma, Desv. Ouatchechou, July, 1882.

C. canescens, Linn. Ouatchechou, 8th July, 1882.

C. canescens, Linn., var *vitis*, Gray. Saint Charles Island (Mingan), July, 1882.

C. sterilis, Willd. Saint Charles Island (Mingan), 22nd July, 1882.

C. stellulata, Linn. Mingan River, 16th July, 1882; Pentecost River, 28th August, 1882.

C. scoparia, Schk. Saguenay (Anse-à-l'eau), 20th June, 1884.

C. adusta, Bott. Harbor Island (Mingan), July and August, 1882.

C. vulgaris, Fries. Mingan River, July and August, 1882.

C. salina, Wahl. Ouatchechou, July, 1882.

C. maritima, Vahl. Couetatchou-Manicouagan, June and July, 1882.

C. rariflora, Smith, Ouatchechou, June and July, 1882.

C. irrigua, Smith, Thunder River, August, 1882.

C. aurea, Nutt. Sainte-Geneviève Islet (Mingan), July, 1882.

C. vaginata, Tausch. Harbor Island (Mingan), July, 1882.

C. eburnea, Boott. Mingan River, July and August, 1882.

O. Notae-Angliae, Schw. Esquimaux Island (Mingan), July, 1882.

- O. capillaris*, Linn. Esquimaux Islands, (Mingan), July 1882.
O. flava, Linn. Pentecost River, July and August, 1882.
O. oligosperma, Michx. Thunder River, August, 1882.
O. miliaris, Michx. Pentecost River, August, 1882.
O. concinna, R. Br. Sainte-Geneviève Islet, July, 1882.
O. glareosa (Macoun) Ouatchechou, June and July, 1882.
O. cristata, Schk. var. *mirabilis*. Boott. Pentecost River, August 1882.

Blysmus rufa (Panz.). Hunting Island (Mingan), July, 1882.

GRAMINEAE.

- Agrostis scabra*, Willd. River Sheldrake, 29th August, 1884.
A. canina, Linn. Lobster Bay, 28th August, 1884.
Calamagrostis Langsdorffii, Trin. Thunder River, August, 1882.
C. stricta, Trin. Gamache Bay (Anticosti), 6th August, 1882.
Spartina cynosuroides, Willd. Pentecost River, Bassin, 28th August, 1884.
Glyceria canadensis, Trinius, Thunder River, 19th August, 1884.
G. elongata, Trin. Pentecost River, August, 1882.
G. nervata, Trin. Thunder River, August, 1882.
G. maritima, Wahl. Sainte-Geneviève Islet, August, 1882.
Catabrosa aquatica, Beauv. Pentecost River, August, 1882.
Poa alpina, Linn. Harbour Island (Mingan), 30th July, 1882.
P. pratensis, Linn. Ouatchechou, 14th June, 1882.
P. glumaris, Trin. Mingan Islands, July and August, 1882.
Festuca tenella, Wild. Sheldrake River, 22nd August, 1884.
F. duriuscula, Linn. Gamache Bay (Anticosti), 8th August, 1884.
Bromus ciliatus, Linn. Pentecost River; Gamache Bay (Anticosti), August, 1882.
B. secalinus, Linn. Mingan River, August, 1882.

Triticum repens, Linn. Gamache Bay (Anticosti), 6th August, 1884.

T. vulgare, Villars, Pentecost River, 29th August, 1884.

Hordeum jubatum, Linn. Gamache Bay (Anticosti), 5th August, 1884.

Elymus virginicus, Linn. Gamache Bay (Anticosti), 7th August, 1884.

E. mollis, Trin. Gamache Bay (Anticosti), 8th August, 1884.

Trisetum subspicatum, Beauv., var. *molle*, Gray. Manouin Island (Seven Islands Bay), June and July, 1882; Grande Isle (Mingan), 31st July, 1884.

Aira flexuosa, Linn. Gamache Bay (Anticosti), 6th and 7th August, 1884.

A. caespitosa, Linn. Sheldrake River, August, 1882.

Hierochloa borealis, Roem. & Schultes, Sheldrake River, 23rd August, 1884.

Anthoxanthum odoratum, Linn. Sainte-Geneviève Island, July, 1882; Seven Islands Bay, 13th June, 1884.

Millium effusum, Linn. Thunder River, 19th August, 1884.

Fanicum capillare, Linn. Lobster Bay, 28th August, 1884.

EQUISETACEAE.

Equisetum hyemale, Linn. Mingan Islands, 15th August, 1882.

Equisetum scirpoides, Michx. Mingan Islands, 5th August, 1884.

E. limosum, Linn. Mingan River, August, 1882.

FILICES.

Polypodium vulgare, Linn. Falls of the Mingan River, 29th July, 1882.

Pteris aquilina, Linn. Thunder River, 19th August, 1882.

Pellaea gracilis, Hooker, Sainte-Geneviève Island (Mingan), 18th and 27th July, 1882.

Phegopteris dryopteris, Fée. Ouatchechou, 12th July, 1882; Mingan, July and August, 1882.

P. polypodioides, Fée. Ouatchechou, 12th July, 1882.

Aspidium spinulosum, Willd. Sheldrake River, 29th August, 1882.

A. spinulosum, Willd. var. *intermedium*, Gray. Mingan Point; Sheldrake River, August, 1882.

Cystopteris fragilis, Bernhardi. Sainte-Geneviève Island (Mingan), 18th July, 1882.

C. bulbifera, Bernhardi. Fall of the Mingan River, 29th July, 1882.

Struthiopteris germanica, Willd. Sheldrake River, 23rd August, 1882.

Onoclea sensibilis, Linn. Thunder River, 12th August, 1882.

Woodsia hyperborea, Brown. Mingan Island, 12th July, 1882.

W. ilvensis R. Br. Pentecost River, 30th September, 1882.

Osmunda cinnamomea, Linn. Thunder River, 12th August, 1882.

O. claytoniana, Michx. Thunder River, 12th August, 1882.

Botrichium matricariaefolium (Al. Br.) Gamache Bay (Anticosti), 4th August, 1882.

B. lunaria, Swartz. Gamache Bay (Anticosti), 10th August, 1882.

LYCOPODIACEAE.

Lycopodium complanatum, Linn. Mingan Harbor, 22nd June, 1882.

L. dendroideum, Michx. Esquimaux Island (Mingan), 12th July, 1882.

L. Sabinaefolium, Willd. Mingan, 15th August, 1882.

Selaginella rupestris. Spreng. Tadoussac, 8th September, 1882.

SPHAGNACEAE

Sphagnum acutifolium, Ehrh. Ouatchechou, July and August, 1882.

S. fimbriatum, Wilson. Mingan Islands, July and August, 1882.

S. contortum, Schultz. Thunder River, August, 1882.

S. cymbifolium, Wils. Thunder River, August, 1882.

ANDREAEACEAE.

Andreaea rupestris, Linn. & Hedw. on the granitic rocks. Mingan Falls, July, 1882.

A. nivalis, Hooker. Ouatchechou. Denuded mountains, August, 1885.

BRYACEAE.

Dicranum Schraderi, Web, et Mohr. Ouatchechou, July, 1882.

Dicranum majus, Turn. Ouatchechou, July, 1882.

D. scoparium, Hedw. Tadoussac, September, 1882.

Leucobryum vulgare, Hampe. Ouatchechou, June and July, 1882.

Leptobryum pyriforme, Schimper. Thunder River, August, 1882.

Bryum annotinum, Hedw. Ouatchechou, July, 1882.

B. cernuum, Hedw, Br. et Sch.) Tadoussac, September, 1882.

B. alpinum, Linn. Ouatchechou, July, 1882.

B. caespiticum, Linn. Saint-Paul's Bay, May and June, 1882.

B. pallens, Swartz. Saint-Paul's Bay, May and June, 1882.

Mnium punctatum, Hedw. Stream, Saint-Irénée (Charlevoix), September, 1882.

M. palustre, Linn. Trinity River, North shore, September, 1882.

Politricum piliferum, Schreb. Mingan Islands, July and August, 1882.

P. juniperinum, Hedw. Mingan Islands, July and August, 1882.

P. commune, Linn. Everywhere, July and August, 1882.

Hypnum salebrosum, Hoffm. Tadoussac, September, 1882.

HEPATICAE.

Marchantia polymorpha, Linn. Stream (Tadoussac), September, 1882.

PHYCACEAE.

Agarum Turneri, Post. et Rupr. Mingan Islands, July, 1882.

Fucus vesiculosus, Linn. Trinity Bay, North shore, September, 1882.

F. furcatus, Linn. Trinity Bay, North shore, September, 1882.

Callithamnion (Lyngb). Mingan Islands, July, 1882.

Cystoclonium purpurascens, Kutz. Malbaie (Charlevoix), 1882.

Odonthalia dentata, Lyngb. Saint-Barnabé Island (Rimouski), 1882.

Ulva enteromorpha, (Macoun). Lobster Bay, August, 1882.

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- 1 *T. anemonoides*, Michx. Toronto, May, 1884.
- 2 *T. dioicum*, Linn. Island of Orleans, woods, June, 1882; also Mingan Islands, July, 1882.
- 3 *T. purpurascens*, Linn. Island of Orleans, May, 1883.

4. *T. cornuti*, Linn. Island of Orleans, July, 1883; Mingan Islands, July, 1882.

5 *T. alpinum*, Linn. Mingan Islands; Island of Anticosti and North shore of the Gulf of Saint-Lawrence, July, 1882.

4—*RANUNCULUS*, Linn.

1 *R. flammula*, Linn., var. *reptans*, Meyer. Mingan River, July, 1882.

2 *R. Oymbalaria*, Pursh. Beauport; Island of Orleans, June, 1883.

3 *R. rhomboideus*, Goldie. Montreal, May, 1883.

4 *R. abortivus*, Linn. Tadoussac, September, 1882.

5 *R. sceleratus*, Linn. La Canardière, near Quebec, June, 1883.

6 *R. recurvatus*, Poir. Island of Orleans, June, 1883.

7 *R. pennsylvanicus*, Linn. Pentecost River, August, 1882.

8 *R. repens*, Linn. Grande Allée, South of the Parliament Building, June, 1884.

9 *R. acris*, Linn. Quebec; Mingan, July, 1882.

5—*MYOSURUS*, Dillen.

1 *M. minimus*, Linn. Illinois, Oregon, Prairies (low ground), April and May, 1880.

6—*CALTHA*, Linn.

1 *C. palustris*, Linn. Levis; Beauport; Island of Orleans, May, 1884; Mingan Islands, June, 1882.

7—*COPTIS*, Salisb.

2 *C. trifolia*, Salisb. Quebec, Great Mecatina Island, June and July, 1885.

8—AQUILEGIA, Tourn.

- 1 *A. canadensis*, Linn. Island of Orleans; Lewis, June, 1888.

9—ACONITUM, Tour.

- 1 *A. napellus*, Linn. Quebec.

10—ACTAEA, Linn.

- 1 *A. spicata*, Linn., var. *rubra*, Michx. Beauport, June, 1888.

- 2 *A. alba*, Bigelow, Tadoussac; Ouatchechou, June, 1882.

11—PAEONIA, Linn.

- 1 *P. officinalis*, Retz. Québec, August, 1881.

II.—MENISPERMACEAE.

1—MENISPERMUM, Linn.

- 1 *M. canadense*, Linn. Sainte Anne; Batiscan (Champlain County); Lake Saint Charles, June, 1880.

III.—BERBERIDACEAE.

1—BERBERIS, Linn.

- 1 *B. repens*, Lindl. Calgary, Rocky Mountains, 1885, Capt. Pinault.

2—CAULOPHILLUM, Michx.

- 1 *C. thalictroides*, Michx. Sainte Anne (Champlain County), June, 1880.

IV.—NYMPHAEACEAE.

1—NYMPHAEA, Tourn.

- 1 *O. odorata*, Ait. Lake Saint Peter (la Baie du Febvre), August and September, 1880; var. *Minor*, Sims.

2—NUPHAR, Smith.

- 1 *N. advena*, Ait. River Saint Anne de la Péraide ; River Saint Charles, July and August, 1880.
- 2 *N. kalmiana*, Pursh. Sainte Anne de la Péraide, August, 1879.

V.—SARRACENIACEAE.

1—SARRACENIA, Tourn.

- 1 *S. purpurea*, Linn. Ouatchechou, July, 1882 ; *var. heterophylla*, Torrey.

VI.—PAPAVERACEAE.

1—CHELIDONIUM, Linn.

- 1 *O. majus*, Linn. St. Foye Road, Quebec ; Three Rivers, June, 1883.

2—SANGUINARIA, Dill.

- 1 *S. canadensis*, Linn. Island of Orleans ; Sillery, May and June, 1883.

VII.—FUMARIACEAE.

1—DICENTRA, Bork.

- 1 *D. cucullaria*, DC. Ste. Anne de la Péraide, May, 1880.
- 2 *D. canadensis*, DC. Ste. Anne de la Péraide, May, 1880.

2—CORYDALIS, Vent.

- 1 *C. glauca*, Pursh, Mingan River, August, 1882 ; Bellevue, near Quebec, July, 1883.

VIII.—CRUCIFERAE.

1—NASTURTIUM, R. Br.

- 1 *N. palustre*, DC. Ouatchechou, July, 1882.
- Var. hispidum*, Gray. Quebec, at the foot of the walls, July.

2 *N. Armoracia*, Fries, Beauport, July, 1885.

2—DENTARIA, Linn.

1 *D. diphylla*, Linn. Island of Orleans, May, 1884.

2 *D. laciniata*, Muhl, Sainte-Anne de la Pérade, Ruisseau d'Orvilliers, May, June, 1885.

3—CARDAMINE, Linn. Tourn.

1 *C. parviflora*, Linn. France, 1883.

4—ARABIS, Linn.

1 *A. hirsuta*, Scop. Buttes à neveu (Quebec), June, 1884.

2 *A. Drummondii*, Gray, Gamache Bay (Anticosti), August, 1882.

5—HESPERIS, Linn.

1 *H. matronalis*, Linn. Quebec, June, 1884.

6—COCHLEARIA, Tourn.

1 *C. tridactylis*, Banks, Quatchechou, 5th July, 1882; Mingan Islands, 20th June, 1884.

7—BARBAREA, R. Br.

1 *B. vulgaris*, R. Fr. Grande Allée (Quebec), June and July, 1884.

Var. *arcuata*, Gray. Grande Allée, Quebec, 1884.

8—ERYSIMUM, Linn.

1 *E. cheiranthoides*, Linn. Beauport, low ground, near the water, 1881.

9—BRASSICA, Tourn.

1 *B. oleracea*, Linn. Quebec, vacant lots, August, 1882.

2 *B. sinapistrum*, Boissier, Sheldrake River, August, 1882.

10—DRABA, DC.

- 1 *D. ramosissima*, Dev. Mingan Islands, Ouatchechou, July, 1882.
- 2 *D. arabisans*, Michx. Mingan Islands, July, 1882.
- 3 *D. incana*, Linn. Ouatchechou, rocks, July, 1882.
 Var confusa, Poir. Mingan Islands ; Ouatchechou, rocks, July, 1882.

11—LEPIDIUM, Linn.

- 1 *L. sativum*, Linn. West of Sheldrake River, August, 1882.
- 2 *L. virginicum*, Linn. Ottawa, 10th August, 1887.

12—ALYSSUM, Tourn.

- 1 *A. calycinum*, Linn. Massachusetts, meadows, June-October, 1883.

13—CAPSELLA, Vent.

- 1 *C. bursa-pastoris*, Moench. Ouatchechou, July, 1882.

14—THLASPI, Tourn.

- 1 *T. arvense*, Linn. Sheldrake River, August, 1882.

15—CAKILE, Tourn.

- 1 *C. americana*, Nutt, Mingan Islands, July, 1882.

IX—RESEDACEAE.

1—RESEDA, Linn.

- 1 *Reseda odorata*, Linn. Quebec.

X—VIOLACEAE.

1—VIOLA, Linn.

- 1 *V. rotundifolia*, Michx. Island of Orléans ; Mingan, May-June, 1882.

- 2 *V. blanda*, Willd. Cap-Rouge (Bois-joly), May, 1885.
- 3 *V. Selkirkii*, Pursh, Mingan Islands, June, 1882.
- 4 *V. cucullata*, Ait. Island of Orleans, June, 1883.
- 5 *V. canina*, Linn. var. *sylvestris*, Regel. Mingan, June, 1882.
- 6 *V. rostrata*, Pursh, Don River, Toronto, June, 1884.
- 7 *V. canadensis*, Linn. Cap Rouge woods, May-June, 1884.
- 8 *V. pubescens*, Ait. Island of Orleans, July, 1883.
- 9 *V. tricolor*, Linn. Esquimaux Point, July, 1882.

XI—CISTACEAE.

1—LECHEA, Linn.

- 1 *L. minor*, Linn. Ile-au-Haut, Penobscot Bay, Maine, August, 1885. Mrs Flora E. Haines.

XII.—DROSERACEAE.

I.—DROSERA, Linn.

- 1 *D. rotundifolia*, Linn. Lake Long, Champlain county, August, 1883.
- 2 *D. intermedia*, Hayne, Ouatchechou, July, 1882.
Var *americana* DC. Lake Travers, Champlain D.C. county, July, 1880.

XIII.—HYPERICACEAE.

I.—HYPERICUM, Linn.

- 1 *H. ellipticum*, Hook. Beaumont, near a lake, July, 1881.
- 2 *H. perforatum*, Linn. Quebec; Island of Orleans, August, 1883.

XIV.--CARYOPHYLLACEAE.

1.—DIANTHUS, Linn.

- 1 *D. barbatus*, Linn. Sheldrake River, August, 1882. (Mme Touzel.)

2.—SILENE, Linn.

- 1 *S. inflata*, Smith, Environs of Quebec, all the summer, 1880.
2 *S. acaulis*, Linn. Great Mecatina Island, July, 1885.

3—LYCHNIS, TOURN.

- 1 *L. githago*, Lamb. Fields. Montmorency River, July, 1883.

4—ARENARIA, Linn.

- 1 *A. lateriflora*, Linn. Mingan Islands, July-August, 1882.
2 *A. peploides*, Linn. Sainte-Geneviève Islands, (Mingan), July, 1882.
3 *A. michauxii*, Hook. Ile du Havre (Mingan), 14th August, 1882.
4 *A. groenlandica*, Spreng. Mount Desert, Maine, August, 1887 ;
Mrs Flora, E. Haines.

5—STELLARIA, Linn.

- 1 *S. media*, Smith, Gamache Bay (Anticosti), August, 1882.
2 *S. humifusa*, Rottboell. Ouatchechou, July, 1882.
3 *S. graminea*, Bigel. Sainte-Geneviève (Mingan), July, 1884.
4 *S. crassifolia*, Ehrh. Ouatchechou, July, 1882.
5 *S. longipes*, Linn. Sainte-Geneviève Islands, July, 1882.

Var, *Minor*, Hook. Ile du Havre, (Mingan), Humus, 14th August, 1882.

6—CERASTIUM, Linn.

- 1 *C. vulgatum*, Linn. Mingan Islands, August, 1882.

2 *C. arvense*, Linn. Island of Orleans, July, 1883; Ouatchechou, July, 1882.

3 *C. viscosum*, Linn. Gamache Bay, Anticosti, 5th August, 1882.
7—SAGINA, Linn.

1 *S. nodosa*, Fenzl. Pentecost River, August, 1882.

8—SPERGULA, Linn.

1 *S. arvensis*, Linn. Montmorency River, July, 1883.

9—SPERGULARIA, PERS.

1 *S. media*, Presl. Sands on shore, Riv. du Loup, County of Témiscouata, Quebec, August, 1880.

XV.—PORTULACEAE.

1—CLAYTONIA, Linn.

1 *C. virginica*, Linn. Pennsylvania, April, 1880.

2 *C. caroliniana*, Michx. Manouin Islands (Seven Islands Bay), June, 1882.

XVI.—MALVACEAE.

1—ALTHAEA, Linn.

1 *A. rosea*, Cav. Quebec; Cap-Rouge.

XVII.—TILIACEAE.

1—TILIA, Linn.

1 *T. americana*, Linn. Quebec, July-August, 1881.

XVIII.—LINACEAE.

1—LINUM, Linn.

1 *L. perenne*, Linn. Gleichen, N. W. Territory, June, 1885.

2 *L. usitatissimum*, Linn. Gomin Wood, near Quebec, August, 1884.

XIX.—GERANIACEAE.

1—GERANIUM, Linn.

- 1 *G. robertianum*, Linn. Gamache Bay (Anticosti), August, 1882.

2—IMPATIENS, Linn.

- 1 *I. fulva*, Nutt. Beauport, ditches, July, 1884.
2 *I. livida*, Nutt. Sainte-Anne de la Pérade, August, 1874.

3—OXALIS, Linn.

- 1 *O. acetosella*, Linn. Sheldrake River, August, 1882.
2 *O. corniculata*, Linn. Thunder River, August, 1882.
3. *O. stricta*, Linn. La Canardière, August, 1883.

XX—ANACARDIACEAE.

1—RHUS, Linn.

- 1 *R. typhina*, Linn. Lévis Heights, August, 1883.
2 *R. toxicodendron*, Linn. Quebec; Island of Orleans; Sainte-Anne de la Pérade, June, 1880-83;
Var. radicans, Linn. Walls of Quebec, July, 1884.

XXI—VITACEAE.

1—VITIS, Tourn.

- 1 *V. cordifolia*, Michx. Island of Orleans, June, 1883.

XXII—RHAMNACEAE.

1—RHAMNUS, Tourn.

- 1 *R. alnifolius*, L'Hér. Island of Orleans, June, 1883; Gamache Bay (Anticosti), August, 1882.

XXIII CELASTRACEAE.

1--CELASTRUS, Linn.

- 1 *C. scandens*, Linn. Sainte-Anne de la Pérade. (In flower), June, 1880; Ottawa, (In fruit), 10th August, 1887.

XXIV--SAPINDACEAE.

1--ÆSCULUS, Linn.

- 1 *Æs. hyppocastanum*, Linn. Quebec, Grande Allée.

2--ACER, Tourn.

- 1 *A. pennsylvanicum*, Linn. Island of Orleans, June, 1883.
 2 *A. spicatum*, Lam. Mingan Islands; Anticosti, August, 1882.
 3 *A. saccharinum*, Wang. Island of Orleans, May, 1883.
 4 *A. rubrum*, Linn. Gomin Wood, May, 1884.
 5 *A. laciniatum*, Ottawa, Quebec, 1887.

3--NEGUNDO, Moench.

- 1 *N. aceroides*, Moench. Quebec.

XXV--POLYGALACEAE.

1--POLYGALA, Tourn.

- 1 *P. sanguinea*, Linn. Portland (Maine), September, 1884.
 2 *P. verticillata*, Linn. Portland (Maine), September, 1884.
 3 *P. polygama*, Walt. Near Toronto, July, 1884.
 4 *P. paucifolia*, Wild. Anticosti, July and August, 1882.

XXVI--LEGUMINOSAE.

1--TRIFOLIUM.

- 1 *T. arvense*, Linn. Island of Penobscot Bay. Maine, 7th August, 1885. Mrs. Flora E. Haines.

- 2 *T. pratense*, Linn. Sainte-Geneviève Island (Mingan), July, 1882.
- 3 *T. medium*, Linn. Sainte-Geneviève Island (Mingan), July, 1882.
- 4 *T. repens*, Linn. Island of Orleans, June, 1883.
- 5 *T. agrarium*, Linn. Quebec, at the foot of the walls, October,
- 6 *T. procumbens*, Linn. Thunder River, August, 1882.
- 7 *T. hybridum*, Linn. Quebec, near the Parliament Buildings, July, 1884.

2—MELILOTUS, Tourn.

- 1 *M. officinalis*, Wild. Cape Diamond (Quebec), August, 1884.
- 2 *M. alba*, Linn. Island of Orleans, July, 1883.

3—MEDICAGO, Linn.

- 1 *M. sativa*, Linn. Quebec, Place d'Armes, September, 1881.
- 2 *M. lupulina*, Linn. Environs of Quebec, July, 1881.

4—ROBINIA, Linn.

- 1 *R. pseudacacia*, Linn. Cap Rouge, June and July, 1884.

5—ASTRAGALUS, Linn.

- 1 *A. alpinus*, Linn. Island of Orleans, August, 1884.

6—OXYTROPIS, DC.

- 1 *O. campestris*, DC. var. *cærulea*, Koch, Island of Orleans, July, 1883.
- O. splendens*, Douglass, N. W. Territory, Rocky Mountains, June, 1885, (Sergeant E. Boulé).

7—HEDYSARUM, Tourn.

- 1 *H. boreale*, Nutt. Anticosti rocks, August, 1882.
- 2 *H. Mackenzii*, Richardson, N. W. Territory, Rocky Mountains, June, 1885.

8—DESMODIUM, DC.

- 1 *D. nudiflorum*, DC. Island of Orleans, South shore, August, 1883.
- 2 *D. acuminatum*, DC. Island of Orleans, July, 1882.
- 3 *D. canadense*, DC. Cap Rouge ; Deschambault, July-August, 1884.

9—VICIA, Tour.

- 1 *V. sativa*, Linn. Cap Rouge, August, 1884.
Var augustifolia, Gray, Quebec, August, 1884.
- 2 *V. tetrasperma*, Loisel. Quebec, August, 1882.
- 3 *V. hirsuta*, Koch. Grand Island (Mingan), July, 1882.
- 4 *V. cracca*, Linn. Gamache Bay (Anticosti), August, 1882.

10—LATHYRUS, Linn.

- 1 *L. odoratus*, Linn. Cap Rouge, July, 1884.
- 2 *L. maritimus*, Bigel. Pentecost River, July-August, 1882.
- 3 *L. palustris*, Linn. Mingan Islands, July, 1882.

11—APIOS, Boer.

- 1 *A. tuberosa*, Moench. River Sainte Anne de la Pérade ; August, 1883.

12—AMPHICARPAEA, Ell.

- 1 *A. monoica*, Ell. Beauport River, August, 1883.

XXVII.—ROSACEAE.

1—PRUNUS, Tourn.

- 1 *Prunus americana*, Marshall, Sainte Anne de la Pérade ; Quebec, May, 1884.
- 2 *P. pumila*, Linn. Island of Orleans ; Falls of Sainte Anne River, May-June, 1880-4.

- 3 *P. pennsylvanica*, Linn. Ouatchechou, June, 1882.
- 4 *P. virginiana*, Linn. Beauport, June, 1883.
- 5 *P. serotina*, Ehrh. Lorette, June, 1885.
- 6 *P. domestica*, Linn. Côte Beaupré; Island of Orleans, May, 1884.

2—SPIRÆA, Linn.

- 1 *S. opulifolia*, Linn. Island of Orleans; Levis, June, 1881.
- 2 *S. corymbosa*, Raf. Parliament of Quebec, July, 1884.
- 3 *S. salicifolia*, Linn. Mingan River, July, 1882.
- 4 *S. tomentosa*, Linn. Saint Ambroise (Quebec county), August, 1883.
- 5 *S. betulifolia*, Pall. Bow River, North-West Territory, June, 1885.

3—POTERIUM, Linn.

- 1 *P. canadense*, Gray, Beauport, July, 1884.

4—AGRIMONIA, Tourn.

- 1 *A. eupatoria*, Linn. Quebec, July, 1881.

5—DRYAS, Linn.

- 1 *D. octopetala*, Linn., var. *integrifolia*, Cham. & Schl. Mingan Islands, June-July, 1882.

6—GEUM, Linn.

- 1 *G. album*, Gm. On the Levis shores, June, 1883.
- 2 *G. macrophyllum*, Willd. La Canardière, June, 1883.
- 3 *G. strictum*, Ait. La Canardière, June-July, 1884.
- 4 *G. rivale*, Linn. Saint Charles Island (Mingan), July, 1882.
- 5 *G. triflorum*, Pursh, Bow River, North-West Territory, damp meadows, June, 1885.

7. POTENTILLA, Linn.

- 1 *P. norvegica*, Linn. Glacis of Citadel, Quebec, July, 1883.
Var hirsuta, Torr. & Gr. Tadoussac, July, 1884.
- 2 *P. canadensis*, Linn. River du Loup (Témiscouata), July, 1885.
- 3 *P. argentea*, Linn. River du Loup (Témiscouata), July, 1885.
- 4 *P. pennsylvanica*, Linn. Mingan Station, July, 1882.
- 5 *P. arguta*, Pursh. Ouatchechou, July, 1882.
- 6 *P. anserina*, Linn. Mingan River; Ouatchechou, July, 1882.
- 7 *P. fruticosa*, Linn. Mingan Islands, July, 1882.
- 8 *P. tridentata*, Ait. Ouatchechou, July, 1882.
- 9 *P. palustris*, Scop. Mingan Islands; Thunder River, July and August, 1882.

8. FRAGARIA, Tourn.

- 1 *F. virginiana*, Ehrh. Seven Isles' Bay, June, 1882.
- 2 *F. vesca*, Linn. Tadoussac; Ouatchechou, June and July, 1882.

9. RUBUS, Tourn.

- 1 *R. odoratus*, Linn. Island of Orleans, June, 1883.
- 2 *R. chamaemorus*, Linn. Grand Mecatina Island, July, 1885.
- 3 *R. arcticus*, Linn. Grand Mecatina Island, July, 1885; Mingan Island, July, 1882.
Var. grandiflorus, Ledeb. Sainte Geneviève Island (Mingan), July, 1882.
- 4 *R. dalibarda*, Linn. Hunting Island (Mingan), July, 1882.
- 5 *R. triflorus*, Richardson. La Canardière, May, 1884.
- 6 *R. strigosus*, Michx. Mingan Islands; Anticosti, August, 1882.
- 7 *R. villosus*, Ait. Island of Orleans, June, 1883.
Var frondosus, Gray. Levis, September, 1884.

- 8 *R. canadensis*, Linn. Harbor Island (Mingan), June, 1882.

10. ROSA, Tourn.

- 1 *R. setigera*, Michx. Gamache Bay (Anticosti), August, 1882.
 2 *R. blanda*, Ait. Levis, June, 1883; Anticosti, August, 1882.
 3 *R. rubiginosa*, Linn. Kamouraska, July, 1885.

11. CRATAEGUS, Linn.

- 1 *C. coccinea*, Linn. Nicolet; Sainte Anne de la Pérade, May, 1880.
 2 *C. tomentosa*, Linn. Saint Charles River; Lorette Road, June, 1883.
 3 *C. crus-galli*, Linn. Quebec, June, 1883.
 4 *C. punctata*, Jacq. Sainte-Anne de la Pérade, May, 1880.

12. PYRUS, Linn.

- 1 *P. arbutifolia*, Linn. La Canardière, June, 1884.
 2 *P. malus*, Linn. Sainte-Anne de la Pérade, May, 1880.

13. AMELANCHIER, Medic.

- 1 *A. canadensis*, T. and Gr. Tadoussac; Mingan, June, 1882.
Var. oligocarpa, T. and Gr. Canardière, May, 1884.
Var. oblongifolia, T. and Gr. Gomin Wood, May, 1884.

XXVIII—SAXIFRAGACEAE.

1. RIBES, Linn.

- 1 *R. hirtellum*, Michx. Connecticut, May, 1884.
 2 *R. lacustre*, Poir. Mingan Islands; Ouatchechou, June, 1882.
 3 *R. prostratum*, L'Hér. Mingan Islands, June, 1882.
 4 *R. rubrum*, Linn. Cap-Rouge, May, 1884.

5 *R. oxyacanthoides*, Linn. Ouatchechou, July, 1882.

6 *R. rotundifolium*, Michx. Massachusetts ; Gamache Bay, August, 1882.

2. SAXIFRAGA, Linn.

1 *S. aizoides*, Linn. Ilet Sainte-Geneviève (Mingan), July, 1882.

2 *S. aizoon*, Jacq. Saint-Charles Island (Mingan), July, 1883.

3 *S. virginensis*, Michx. Saint-Paul's Bay ; Tadousac, May-June, 1885.

4 *S. caespitosa*, Linn. Grand-Isle (Mingan). July, 1882.

5 *S. caesia*, Linn. France ; Rocks.

3. MITELLA, Tourn.

1 *M. diphylla*, Linn. Montmorency River, July, 1883.

2 *M. nuda*, Linn. Sainte-Geneviève Island (Mingan), July, 1882.

4. TIARELLA, Linn.

1 *T. cordifolia*, Linn. La Canardière, July, 1883.

5. CHRYSOSPLENIUM, Tourn.

1 *C. americanum*, Schweinitz. Jacques-Cartier River, August, 1881.

6. PARNASSIA, Tourn.

1 *P. parviflora*, DC. Harbor Island (Mingan), July, 1882.

2 *P. caroliniana*, Michx. Cap-Rouge, July, 1882.

XXIX—CRASSULACEAE.

1. PENTHEDON, Gronov.

1 *P. sedoides*, Linn. Beauport, July, 1884.

2. SEDUM, Tourn.

- 1 *S. rhodiola*, DC. Mingan Islands, July, 1882 ; Great Mecatina Island, July, 1885.
- 2 *S. acre*, Linn. Saint-Charles Cemetery, Quebec, July, 1884 ; Ottawa, 10th August, 1887, (Mr H. M. Ami).

XXX.—HAMAMELACEAE.

1. HAMAMELIS, Linn.

- 1 *H. virginica* Linn. Island of Orleans, August, 1883.

XXXI.—HALORAGEAE.

1. HIPPURIS, Linn.

1. *H. vulgaris*, Linn. Lake Beauport. August, 1884.
2. *H. maritima*, Hellenius. Grand-Étang (Gaspé), August, 1882.

XXXII - ONAGRACEAE.

1. CIRCAEA, Tourn.

1. *C. lutetiana*, Linn. Island of Orleans, July, 1883.
2. *C. alpina*, Linn. Pentecost River, September, 1882.

2. GAURA, Linn.

1. *F. coccinea*, Nutt. Brandon, North-West Territory, June, 1885.

3. EPILOBIUM, Linn.

- 1 *E. angustifolium*, Linn. Pentecost River, August, 1882.
Var. *canescens*, Wood. Pentecost River, August, 1882.
- 2 *E. latifolium*, Linn. Mingan River, July, 1882.
- 3 *E. coloratum*, Linn. Island of Orleans, July, 1883.
- 4 *E. palustre*, Linn. Gamache Bay, August, 1882.
Var. *lineare*, Gray, Ottawa, August 10th, 1887.

4. *CENOTHERA*, Linn.

- 1 *C. biennis*, Linn. Island of Orleans, July, 1883.
 2 *C. pumila*, Linn. Island of Orleans, July, 1883.

XXXIII—LYTHRACEAE.

1. *LYTHRUM*, Linn.

- 1 *L. salicariu*, Linn. Island of Orleans, July, 1884.

XXXIV—UMBELLIFERAE.

1. *HYDROCOTYLE*, Tourn.

- 1 *H. americana*, Linn. Nicolet ; Sainte-Anne de la Pérade, July,
 and August, 1883.

2. *SANICULA*, Tourn.

- 1 *S. marylandica*, Linn. Gamache, Bay (Anticosti), August,
 1882.
 2 *S. canadensis*, Linn. Island of Orleans ; Cap Rouge, July,
 1884.

3. *HERACLEUM*, Linn.

- 1 *H. lanatum*, Michx. Parrot Islands (Mingan), July, 1885.

4. *PASTINACA*, Tourn. (*Peucedanum*, Linn).

- 1 *P. sativa*, Linn. Etchemin River (Lévis), August, 1883.

5. *ARCHANGELICA*, Hoff.

- 1 *A. Gemelini*, Hoffm. Hunting Island (Mingan), July, 1882 ;
 Grand Mecatina Island, July, 1885.

6. *CARUM*, Koch.

- 1 *C. carui*, Linn. Esplanade, Quebec, September, 1883.

7. *PIMPINELLA*, Linn.

- 1 *P. integerrima*, Benth & Hook. Gamache Bay, August, 1882.

8. SELINUM, Linn.

- 1 *S. canadense*, Michx. Saint-Irénée (Charlevoix), June-July, 1884.
- 2 *S. Benthami*, Watson, Island of Belle-Isle, July, 1884.

9. LIGUSTICUM, Linn.

- 1 *L. scoticum*, Linn. Mingan Islands ; Ouatchechou, July, 1882.

10. THASPIUM, Nutt.

- 1 *T. aureum*, Nutt. Island of Orleans, June, 1883.
- 2 *T. trifoliatum*, Gray, Calgary, prairies of North-West, June, 1885.

11. ZIZIA, Koch.

- 1 *Z. integerrima*, DC. Cap Rouge, June, July, 1884.

12. CICTA, Linn.

- 1 *O. maculata*, Linn. Island of Orleans, August, 1884.
- 2 *O. bulbifera*, Linn. North Shore Railway, along ditches, August, 1884.
- 3 *O. virosa*, Linn. Island of Orleans, July, 1883.

13. SIUM, Linn.

- 1 *S. cicutaeifolium*, Gm. Beauport beach ; Island of Orleans, July, 1881.

14. CRYPTOTAENIA, DC.

- 1 *C. canadensis*, DC. Island of Orleans, August, 1884.

15. OSMORHIZA, Raf.

- 1 *O. longistylis*, DC. Island of Orleans, South side, August, 1884.
- 2 *O. brevistylis*, DC. Island of Orleans, South side, July, 1883.

16. CONIUM, Linn.

- 1 *C. maculatum*, Linn. Quebec, July, August, 1884.

XXXV—ARALIACEAE.

ARALIA, Tourn.

- 1 *A. racemosa*, Linn. Island of Orleans, August, 1884.
2 *A. hispida*, Michx. Quebec, near the North Shore Railway, August, 1884.
3 *A. nudicaulis*, Linn. Anticosti; Mingan Islands, August, 1882.
4 *A. quinquefolia*, Fray. Sainte Anne de la Pérade, July, 1880.
5 *A. trifolia*, Gray. Gomin Wood, June, 1883.
6 *Hedera helix*, Gray. Quebec, September, 1882.

XXXVI—CORNACEAE.

1. CORNUS, Tourn.

- 1 *C. canadensis*, Linn. Ouatchechou, July, 1882.
2 *C. suecica*, Linn. Ouatchechou, July, 1882.
3 *C. Urcinata*, l'Hér. Island of Orleans, August, 1883.
4 *C. stolonifera*, Michx. Mingan Islands, July, 1882.
5 *C. paniculata*, l'Hér. Island of Orleans, June, 1883.
6 *C. alternifolia*, Linn. Saint Charles River, June, 1884.
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GAMOPETALOUS EXOGENOUS PLANTS.

XXXVII—CAPRIFOLIACEAE.

1. LINNAEA, Gronovius.

- 1 *L. borealis*, Gronov. Mingan Islands, July, 1882.

2. SYMPHORICARPUS, Dill.

- 1 *S. racemosus*, Michx. Calgary, North-West Territory, June,
1883.

3. LONICERA, Linn.

- 1 *L. grata*, Ait. Cap Rouge, July, 1884.
2 *L. ciliata*, Muhl. Gomin Wood, May, 1883.
3 *L. coerulea*, Linn. Mingan Islands, June, 1882.
4 *L. tartarica*, Linn. Near the Parliament Buildings, Quebec,
June, 1883.

4. DIERVILLA, Tourn.

- 1 *D. trifida*, Moench. Island of Orleans, August, 1883.

5. TRIOSTEUM, Linn.

- 1 *T. perfoliatum*, Linn. Cap Rouge, July, 1884 (Bois).

6. SAMBUCUS, Tourn.

- 1 *S. canadensis*, Linn. Island of Orleans, July, 1883.
2 *S. pubens*, Michx. Gomin Wood, May-June, 1883.

7. VIBURNUM, Linn.

- 1 *V. nudum*, Linn. Ste. Foye, June-July, 1882.
2 *V. pauciflorum*, Pylaie, Mingan Point, July, 1882.
3 *V. opulus*, Linn. Island of Orleans, June, 1883.
4 *V. lantanoides*, Michx. Island of Orleans, June, 1881.

XXXVIII—RUBIACEAE.

1. GALIUM, Linn.

- 1 *G. trifidum*, Linn. Island of Orleans, June, 1883.
 Var. pusillum, Gray, Mingan, July, 1882.
 Var. tinctorium, Gray, Island of Orleans, July, 1883.
 2 *G. triflorum*, Michx. Montmorency River, July, 1884.
 3 *G. circaezans*, Michx. Island of Orleans, June, 1883.
 7 *G. borealis*, Linn. Calgary, North-West Territory, June, 1885.

2. MITCHELLA, Linn.

- 1 *M. repens*, Linn. Island of Orleans, July, 1883.

3. HICUSTONIA, Linn.

- 1 *H. coerulea*, Linn. Mount Washington, September 1880;
 Nicolet, August, 1878.

XXXIX—VALERIANACEAE.

1. VALERIANA, Tourn.

- 1 *V. capitata*, Willd. *Var. Hookeri*, Torr. & Gray. Tennessee,
 1883.

XL—COMPOSITAE.

1. LIATRIS, Schreb.

- 1 *L. cylindracea*, Michx. Near Toronto, September, 1884.

2. EUPATORIUM, Tourn.

- 1 *E. purpureum*, Linn. Beauport, August, 1883.
 2 *E. perfoliatum*, Linn. Saint-Sauveur, Quebec, August, 1884.
 3 *E. ageratoides*, Linn. Island of Orleans, August, 1883.

3. TUSSILAGO, Tourn.

- 1 *T. farfara*, Linn. Cap-Rouge, June, 1886. (Abbé Provancher)

4. PETASITES, Tourn. (Nardosmia, Cass.)

- 1 *P. palmata*, Gray, Marsh, Cap Rouge, May-June, 1873, (Dr. Thomas).

5. ASTER, Linn.

- 1 *A. macrophyllus*, Linn. Grande Allée, Québec, August, 1884.

- 2 *A. cordifolius*, Linn. Saint-Irénée (Charlevoix), September, 1882.

- 3 *A. diffusus*, Hook. Lévis Hills, August, 1883.

Var. *hirsuticaulis*, Gray, Island of Orleans,
August, 1884.

- 4 *A. paniculatus*, Lam. Island of Orleans, July, 1883.

- 5 *A. salicifolius*, Ait. Island of Orleans, July, 1883.

- 6 *A. junceus*, Ait, Island of Orleans, on the beach, August, 1884.

- 7 *A. tardiflorus*, Linn. Lévis, September, 1884.

- 8 *A. puniceus*, Linn. Pentecost River, August, 1882.

Var. *firmus*, T. and Gr. Sheldrake River, August, 1882.

- 9 *A. acuminatus*, Michx. Lévis, August, 1882.

- 10 *A. nemoralis*, Ait. Sheldrake Riv., August, 1882.

- 11 *A. umbellatus*, Mill. Quebec, September, 1883.

5—ERIGERON, Linn.

- 1 *E. Canadense*, Linn. Beauport, July, 1884; Ottawa, August, 1887, (Champs).

- 2 *E. acris*, Linn. Anticosti, August, 1882.

- 3 *E. bellidifolius*, Muhl. Cap-Rouge, August, 1884.

4 *E. philadelphicus*, Linn. Montmorency Riv., July, 1883.

5 *E. caespitosus*, Hook. Calgary, North-West territory, June, 1885.

6 *E. strigosus*, Muhl. Montmorency Riv., July, 1885.

7—*BELLIS*, Tourn.

1 *B. perennis*, Linn. Quebec, June, 1884.

8. *SOLIDAGO*, Linn.

1 *S. squarrosa*, Muhl. Lotbinière, August, 1884.

2 *S. bicolor*, Linn. *Var. concolor*, T. & Gr., on the beach of the Island of Orleans, August, 1883.

3 *S. latifolia*, Linn. Levis, August, 1883.

4 *S. macrophylla*, Pursh. Lake Saint-Joseph, August, 1883.

5 *S. arguta*, Ait. Gomin Wood, August, 1884.

6 *S. rugosa*, Mill. Thunder River, August, 1882.

7 *S. nemoralis*, Ait. Montmorency River, July, 1883.

8 *S. canadensis*, Linn. Saint-Ambroise, August, 1883.

9 *S. serotina*, Ait. Saint-Sauveur, Quebec. August, 1884.

10. *S. gigantea*, Ait. Calgary, North West Territory, June, 1885.

11. *S. lanceolata*, Linn. Island of Orleans, August, 1883.

9. *AMBROSIA*, Tourn.

1 *A. trifida*, Linn. Beauport, August, 1883.

2 *A. artemisiifolia*, Linn. Beauport, August, 1883.

10. *RUDBECKIA*, Linn.

1 *R. laciniata*, Linn. Island of Orleans, August-September, 1883.

2 *R. hirta*, Linn. Island of Orleans, August, 1883.

11. HELIANTHUS, Linn.

- 1 *H. tuberosus*, Linn. Cap-Rouge, August, 1884.

12. COREOPSIS, Linn.

- 1 *O. tinctoria*, Nutt. Island of Orleans, October, 1882.

13. BIDENS, Linn.

- 1 *B. frondosa*, Linn. Saint-Charles River, August, 1883.
- 2 *B. cernua*, Linn. Beauport, September, 1883.
- 3 *B. chrysanthemoides*, Michx. Quebec, August, 1884.

14. HELENIUM, Linn.

- 1 *H. autumnale*, Linn. Island of Orleans, August, 1884.

15. MARUTA, Cass.

- 1 *M. cotula*, DC. Quebec, August, 1883.

16. ACHILLEA, Linn.

- 1 *A. millefolium*, Linn. Mingan Islands, July, 1882.
- 2 *A. ptarmica*, Linn. Vermont, 1878.

17. LEUCANTHEMUM, Tourin.

- 1 *L. vulgare*, Lam. Gamache Bay, August, 1882.
- 2 *L. sinense*, Sabine. Quebec, September, 1883.
- 3 *L. parthenium*, Godron, Quebec, October, 1884.

18. MATRICARIA, Linn.

- 1 *M. inodorata*, Linn. Quebec, August, 1884.

19. TANAGETUM, Linn.

- 1 *T. vulgare*, Linn. Beauport, August, 1884.

20. GAILLARDIA, Fourgeroux.

- 1 *G. cristata*, Pursh. Calgary, North-West Territory, June, 1885.

21. ARTEMISIA, Linn.

- 1 *A. canadensis*, Michx. Mingan River, July, 1882.
- 2 *A. ludoviciana*, Nutt. Calgary, North-West Territory, June, 1885.
- 3 *A. vulgaris*, Linn. Sheldrake River, August, 1882.
- 4 *A. frigida*, Wild. Calgary, North-West Territory, June, 1885.

22. GNAPHALIUM, Linn.

- 1 *G. polycephalum*, Michx. Cap-Rouge, August, 1884.
- 2 *G. uliginosum*, Linn. Cap-Rouge, August, 1884.

23. ANTENNARIA, Gaertn.

- 1 *A. (Anaphalis, DC). margaritacea*, R. Br. Pentecost River, August, 1882.
- 2 *A. plantaginifolia*, Hook. Island of Orleans, August, 1883.
- 3 *A. dioica*, Gaertn. Calgary, North-West Territory, June, 1883.
- 4 *A. alpina*, Gaertn. Anticosti, August, 1882.

24. ERECHTITES, Raf.

- 1 *E. hieracifolia*, Raf. Etchemin River, August, 1883.

25. SENECIO, Linn.

- 1 *S. vulgaris*, Linn. Quebec; Sheldrake River, August, 1882.
- 2 *S. aureus*, Linn. Island of Orleans, July, 1883.
 Var. borealis, T. & G. Magdalen Islands, August, 1884.
- 3 *S. pseudo-arnica*, Less. Mingan Islands, August, 1882.

26. CENTAUREA, Linn.

- 1 *C. cyamus*, Linn. Quebec, August, 1884.

27. CNICUS, Vaill.

- 1 *C. lanceolatus*, Hoffm. Quebec, July-August, 1884.
 2 *C. undulatus*, Spreng, Calgary, North-West Territory, June,
 1885.
 3 *C. arvensis*, Scop. Sainte-Foye, Quebec, July, 1884.

28. ARCTIUM, Linn.

- 1 *A. lappa*, Linn. Quebec, July, 1883.

29. LAMPSANA, Tourn.

- 1 *L. communis*, Linn. Quebec, July, 1883.

30. CICHORIUM, Tourn.

- 1 *C. intybus*, Linn. Quebec, July, 1884.

31. LEONTODON, Linn. Juss.

- 1 *L. autumnale*, Linn. Thunder River, August, 1882.

32. HIERACIUM, Tourn.

- 1 *H. umbellatum*, Michx. Sheldrake River, August, 1882.
 2 *H. scabrum*, Michx. Quebec, July, 1886.
 3 *H. vulgatum*, Fries. Island of Orleans; Tadoussac, July-
 August, 1884.

33. PRENANTHES, Linn.

- 1 *P. alba*, Linn. Island of Orleans, August, 1884.
 2 *P. altissima*, Linn. Levis, August, 1884.
 3 *P. racemosa*, Michx. Sheldrake River, August, 1882.

- 4 *P. serpentaria*, Pursh. Island of Orleans, August, 1884.

34. TARAXACUM, Hall.

- 1 *T. dens-leonis*, Desf. Quebec, May, October, 1884.

35. LACTUCA, Tourn.

- 1 *L. leucophaea*, Gray. Island of Orleans, July, 1884.

36. SONCHUS, Linn.

- 1 *S. oleraceus*, Linn. Quebec, August, 1884.

- 2 *S. asper*, Vill. Quebec, August, 1884.

- 3 *S. arvensis*, Linn. Quebec, August, 1883.

37. TRAGOPOGON, Linn.

- 1 *T. porrifolius*, Linn. Lotbinière, August, 1883.

38. CALENDULA, Linn.

- 1 *C. officinalis*, Linn. Quebec, August, 1881.

39. AGERATUM, Cass.

- 1 *A. coeruleum*, Desf. Quebec, August, 1881.

XLI—LOBELIACEAE.

1. LOBELIA, Linn.

- 1 *L. cardinalis*, Linn. Sainte Anne de la Pérade, July, 1880.

- 2 *L. inflata*, Linn. Lorette, August, 1881.

- 3 *L. Kalmii*, Linn. Montmorency River, July, 1881.

XLII—CAMPANULACEAE.

1. CAMPANULA, Tourn.

- 1 *C. rotundifolia*, Linn. Island of Orleans, July-August, 1883.

2 *C. Scheuchzeri*, Vill. Ouatchechou, July, 1882.

3 *C. americana*, Linn. Quebec, September, 1882.

XLIII—ERICACEAE.

1. VACCINIUM, Linn.

1 *V. oxycoccus*, Linn. Mingan Islands, July, 1882.

2 *V. vitis-idaea*, Linn. Tadoussac; Ouatchechou, June-July, 1882.

3 *V. uliginosum*, Linn. Ouatchechou, July, 1882.

4 *V. pennsylvanicum*, Lam. Ouatchechou, July, 1882.

5 *V. canadense*, Kalm. Sainte Foye, June, 1884.

2. CHIOGENES, Salisb.

1 *C. hispidula*, T. & Gr. Mingan Islands, July, 1882.

3. ARCTOSTAPHYLOS, Adanson.

1 *A. uva-ursi*, Spreng. Mingan Islands, June, 1882.

2 *A. alpina*, Spreng. Great Mecatina Island, July, 1885.

4. EPIGAEA.

1 *E. repens*, Linn. Saint Paul's Bay, June, 1882; Gomin Wood, May, 1885.

5. GAULTHERIA, Kalm.

1 *G. procumbens*, Linn. Ste. Anne de la Pérade, June, 1880.

6. CASSANDRA, Don.

1 *C. calyculata*, Don. Tadoussac, June, 1882.

7. ANDROMEDA, Linn.

1 *A. polifolia*, Linn. Ouatchechou, July, 1882.

8. KALMIA, Linn.

- 1 *K. angustifolia*, Linn. Mingan Islands, July, 1882.
- 2 *K. glauca*, Ait. Ouatchechou, June, 1882.
- 3 *K. latifolia*, Linn. Carmel (Maine), 11th July, 1885; Mrs. Flora E. Haines, also at Ouatchechou, July, 1882; Rocks and Swamps.

9. RHODORA, Duhamel.

- 1 *R. canadensis*, Linn. Ouatchechou, June, 1882.

10. LEDUM, Linn.

- 1 *L. latifolium*, Ait. Ouatchechou, June, 1882.
- 2 *L. palustre*, Linn. Labrador, July, 1882.

11. LOISELEURIA, Desv.

- 1 *L. procumbens*, Desv. Mingan Islands, July, 1882.

12. PYROLA, Tourn.

- 1 *P. rotundifolia*, Linn. Mingan Islands, July, 1882.
Var. uliginosa, Gray. Mingan Islands, July, 1882.
Var. asarifolia, Hook. Mingan Islands, July, 1882.
- 2 *P. elliptica*, Nutt. Montmorency River, July, 1882.
- 3 *P. chlorantha*, Swartz. Mingan Islands, July, 1882.
- 4 *P. secunda*, Linn. Mingan Islands, July, 1882.
Var. pumila, Gr. Mingan Islands, July, 1882.

13. MONESES, Salisb.

- 1 *M. uniflora*, Salisb. Mingan Islands, July, 1882.

14. CHIMAPHILA, Pursh.

- 1 *C. umbellata*, Nutt. Ste. Anne de la Pérade, July, 1878.

15. MONOTROPA, Linn.

- 1 *M. uniflora*, Linn. Island of Orleans, July, August, 1883.

XLIV—AQUIFOLIACEAE.

1. ILEX, Linn.

- 1 *verticillata*, Gray, island of Orleans, June, 1883.

2. NEMOPANTHES, Raf.

- 1 *N. canadensis*, DC. Island of Orleans, June, 1883.

XLV—PLANTAGINACEAE.

1. PLANTAGO, Linn.

- 1 *P. major*, Linn. Quebec, August, 1884.
 2 *P. maritima*, Linn. Mingan Islands, July, 1882.
 3 *P. lanceolata*, Linn. Environs of Quebec, July, 1884.
 Var. vulgaris, Gray, Quebec, August, 1882.
 4 *P. Rugelii*, Dec. Island of Orleans, August, 1884.
 5 *P. eriopoda*, Tor. Gamache Bay (Anticosti), August, 1882.
 6 *P. decipiens* Berneoud. Ouatchechou, July, 1882.
 7 *P. lanceolata*, Linn., *var. vulgaris*, Gr. Quebec.

XLVI—DIAPENSIACEAE.

1. DIAPENSIA, Linn.

- 1 *D. lapponica*, Linn. Mingan Islands, July, 1882; Great Mecatina Island, June and July, 1882.

XLVII—PRIMULACEAE.

1. PRIMULA, Linn.

- 1 *P. farinosa*, Linn. Mingan Islands, June and July, 1882.
 2 *P. mistassinica*, Michx. Mingan Islands, June and July, 1882.

2. ANDROSACE, Tourn.

- 1 *A. occidentalis*, Linn. Mingan Islands, June and July, 1882.
- 2 *A. septentrionalis*, Linn.

TRIENTALIS, Linn.

- 1 *T. americana*, Pursh. Quebec ; Ouatchechou, July, 1882.

4. LYSIMACHIA, Tourn.

- 1 *Tridynia*, Raf.
- 2 *L. stricta*, Ait. Island of Orleans, July, 1883.
- 3 *L. quadrifolia*, Linn. Beauport, August, 1883.
- 4 *Steironema*, Raf.
- 5 *L. ciliata*, Linn. Quebec, August, 1881.

5. GLAUX, Linn.

- 1 *G. maritima*, Linn. Ouatchechou, July, 1882.

XLVIII—LENTIBULACEAE.

1. PINGUICULA, Linn.

- 1 *P. vulgaris*, Linn. Mingan Islands, July and August, 1882.

XLIX—OROBANCHACEAE.

1. EPIPHEGUS, Nutt.

- 1 *E. virginiana*, Bart. Etchemin River (Lévis), August, 1883.

L—SCROPHULARIACEAE.

1. VERBASCUM, Linn.

- 1 *V. thapsus*, Linn. Island of Orleans, July, 1883.

2. LINARIA, Tourn.

- 1 *L. vulgaris*, Miller, Quebec, July-August, 1883,

- 2 *L. canadensis*, Spreng. Riv. du Loup (en bas), August, 1884,
(Dr. Thomas.)

3. SCROPHULARIA, Linn.

- 1 *S. nodosa*, Linn. Island of Orleans, July, 1884.

4. CHELONE, Tourn.

- 1 *C. glabra*, Linn. Beauport, August, 1883.

5. MIMULUS, Linn.

- 1 *M. ringens*, Linn. Beauport, August, 1883.
2 *M. moschatus*, Douglass, Ste-Foye, September, 1883.
3 *M. Jamesii*, T & Gr. Thornhill, Vaughan township, Ont.,
August, 1884.

6. GRATIOLA, Linn.

- 1 *G. virginica*, Linn. Saint-Joachim, July-August, 1883.

7. ILYSANTHES, Raf.

- 1 *I. gratioides*, Benth. Jacques-Cartier River, Sainte-Catherine,
(Portneuf), July, 1883.

8. VERONICA, Linn.

- 1 *V. americana*, Schweinitz, Gamache Bay (Anticosti), August,
1882.
2 *V. scutellata*, Linn. Lévis, July, 1883.
3 *V. serpyllifolia*, Linn. La Canardière, July, 1883.
4 *V. chamaedrys*, Linn. Lévis, June, 1883.

9. EUPHRASIA, Tourn.

- 1 *E. officinalis*, Linn. Quebec, July, 1883; Mingan Islands,
July, 1882.

10. RHINANTHUS, Linn.

- 1 *R. crista-galli*, Linn. Anticosti, August, 1882.

11. PEDICULARIS, Tourn.

- 1 *P. canadensis*, Linn. Gomin Wood, June, 1882.
2 *P. palustris*, Linn. Island of Orleans, July, 1884.

12. MELAMPYRUM, Linn.

- 1 *M. americanum*, Michx. Montmorency River, July, 1883.

LI--VERBENACEAE.

1. VERBENA, Linn.

- 1 *V. hastata*, Linn. Beauport, July, 1883.
2 *V. urticacifolia*, Linn. Beauport, July, 1884 ; Ottawa, August, 1887.
3 *V. aubletia*, Linn. Quebec, August 1881.

2. PHRYMA, Linn.

- 1 *P. leptostachya*, Linn. Sainte Anne de la Pérade, July, 1887 ;
Ottawa, August, 1887.

LII--LABIATAE.

1. MENTHA, Linn.

- 1 *M. viridis*, Linn. Beauport, August, 1883.
2 *M. canadensis*, Linn. Island of Orleans, August, 1884.
Var. glabrata, Benth. Lorette ; Beauport, August, 1884.

2. LYCORUS.

- 1 *L. virginicus*, Linn. Beauport, August, 1881 ; Ottawa, August, 1887.
Var. sinuatus, Benth. Island of Orleans, August, 1883.

3. PYCNANTHEMUM, Michx.

- 1 *P. incanum*, Michx. Lorette, August, 1883.

4. THYMUS, Linn.

- 1 *T. vulgaris*, Linn. Quebec.

5. MONARDA, Linn.

- 1 *M. fistulosa*, Linn. Var. *mollis*, Gray, Calgary, June, 1885.

6. NEPETA, Linn.

- 1 *N. cataria*, Linn. Beauport, August, 1882.

7. BRUNELLA, Tourn.

- 1 *B. vulgaris*, Linn. Island of Orleans, July, 1883.

8. SCUTELLARIA, Linn.

- 1 *S. parvula*, Michx. Island of Orleans, August, 1883.

- 2 *S. galericulata*, Linn. Island of Orleans, August, 1883.

- 3 *S. lateriflora*, Linn. Riverin River, North-Shore, August, 1882,
Ottawa, August, 1887.

9. GALEOPSIS.

- 1 *G. tetrahit*, Linn. Island of Orleans, July 1883.

10. STACHYS, Linn.

- 1 *S. palustris*, Linn. Island of Orleans, August, 1883.

11. LAMIUM, Linn.

- 1 *L. amplexicaule*, Linn. Quebec, June, 1884.

LIII--BORRAGINAGEAE.

1. LYCOPSIS, Linn.

- 1 *L. arvensis*, Linn. Levis, June, 1883.

2. ONOSMODIUM, Michx.

- 1 *O. virginianum*, DC.. Island of Orleans, Rocky soil, hardwood timber, 10th June, 1884.

3. LITHOSPERMUM, Tourn.

- 1 *L. officinale*, Linn. Quebec, August, September, 1880.

4. MERTENSIA, Roth.

- 1 *M. maaitima*, Don. North Shore ; Mingan Islands, July, 1882.

5. MYOSOTIS, Linn.

- 1 *M. palustris*, Withering. Island of Orleans, July, 1883.
2 *M. laxa*, Lehn. Island of Orleans, 17th July, 1883. Banks of streams.

6. ECHINOSPERMUM, SWARTZ.

- 1 *E. lappula*, Lehm. Quebec, September, October, 1882.
2 *E. floribundum*, Swartz. Calgary, North-West Territory, June, 1885.

7. CYNOGLOSSUM, Tourn.

- 1 *C. officinale*, Linn. Levis, July, 1883.
2 *C. virginicum*, Linn. Island of Orleans, July, 1883.

8. HELIOTROPIUM, Tourn.

- 1 *H. peruvianum*, Linn. Quebec.

LIV - HYDROPHYLLACEAE.

1. HYDROPHILLUM, Linn.

- 1 *H. virginicum*, Linn. Island of Orleans, July, 1883.

 LV—POLEMONIACEAE.

1. PHLOX, Linn.

- 1 *P. divaricata*, Linn. Richardson's bridge; near Quebec, August, 1881.
- 2 *P. Drummondii*, Hook. Quebec.

2. GILIA, Ruiz & Pav.

- 1 *G. tricolor*, Benth. Quebec, June, 1885.

LVI—CONVOLVULACEAE.

1. CALYSTEGIA, R. Br.

- 1 *C. sepium*, R. Br. Island of Orleans, June, 1883.

2. CUSCUTA, Tourn.

- 1 *C. epilinum*, Weihe.
- 2 *C. americanum*, Pursh.

LVII—SOLANACEAE.

1. SOLANUM, Tourn.

- 1 *S. nigrum*, Linn. Ottawa, 10th August, 1887. M. H. M. Ami.
- 2 *S. pseudo-capsicum*, Linn. Quebec, 20th August, 1887.

1. PETUNIA, Jussieu.

- 1 *P. violacea*, Lindl. Quebec, August, 1881.

2. LYCOPERSICUM, Tourn.

- 1 *L. esculentum*, Miller. Quebec, August, 1883.

3. HYOSCYAMUS, Tourn.

- 1 *H. niger*, Linn. Quebec, July, 1883.

LVIII—GENTIANACEAE.

1. HALENIA, Bork.

- 1 *H. deflexa*, Grisebach, Mingan Island, July, 1882.

Var. *brentoniana*. Mingan Islands, July, 1882.

2. GENTIANA, Linn.

- 1 *G. serrata*, Linn. Island of Orleans, August, 1883.

- 2 *G. amarilla*, Linn. Trinity Point, September, 1882.

- 3 *G. saponaria*, Linn. Saint Ambroise (Quebec Co.), August, 1883.

- 4 *G. Andrewsii*, Griseb. Valcartier (Quebec Co.), August, 1883.

3. MENYANTHES, Tourn.

- 1 *M. trifoliata*, Linn. Mingan Islands, July, 1882.

4. PLEUROGYNE, Eschsch.

- 1 *P. rotata*, Griseb. River du Loup (en bas); Trinity Point, July and August, 1882.

LIX—APOCYNACEAE.

1 APOCYNUM, Tourn.

- 1 *A. androsaemifolium*, Linn. August, 1883.

2. PERVINCA, Tourn.

- 2 *P. minor*, Linn. Gomin Wood, June, 1883.

LX—ASCLEPIADACEAE.

1 ASCLEPIAS, Linn.

- 1 *A. Cornuti*, Decne. Island of Orleans, July, 1883.

- 2 *A. quadrifolia*, Jacq. Trinity Bay, June, 1884.

- 3 *A. incarnata*, Linn. La Baie du Febvre, July and August, 1880.

LXI—OLEACEAE.

1. FRAXINUS, Tourn.

- 1 *F. americana*, Linn. Beauport, 1883.

2. SYRINGA, Tourn.

- 1 *S. vulgaris*, Linn. Quebec, June, 1883.

APETALOUS EXOGENOUS PLANTS.

LXII—ARISTOLOCHIACEAE.

1. ASARUM, Tourn.

- 1 *A. canadense*, Linn. Island of Orleans, June, 1883.

LXIII—CHENOPODIACEAE.

1. CHENOPODIUM, Linn.

- 1 *C. album*, Linn. Mingan Islands, July, 1882.
 2 *C. hybridum*, Linn. Quebec, August, 1883.
 3 *C. botrys*, Linn. Quebec, August, 1883.

2. BLITUM, Tourn.

- 1 *B. capitatum*, Linn. Calgary, North-West Territory, June, 1882.

3. ATRIPLEX, Tourn.

- 1 *A. patula*, Linn. Mingan Islands, July, 1882.

4. SALICORNIA, Tourn.

- 1 *S. herbacea*, Linn. Anticosti, August, 1882.

LXIV—AMARANTACEAE.

1. AMARANTUS, Tourn.

- 1 *A. retroflexus*, Linn. Mingan Islands, July, 1882.

LXV—POLYGONACEAE.

1. POLYGONUM, Linn.

- 1 *P. viviparum*, Linn. Mingan Islands, July, 1882.
 2 *P. pennsylvanicum*, Linn. Beauport, July, 1881.
 3 *P. persicaria*, Linn. Island of Orleans, August, 1883.
 4 *P. hydropiperoides*, Michx. Ottawa, 8th August, 1887.
 5 *P. amphibium*, Linn. St. Charles River, September, 1883.
 Var. aquaticum, Willd. St. Charles River, September, 1882.
 Var. terrestre, Willd. Ottawa, near the discharge of Rideau Canal, August, 1887. Wet and stony soil.
 7 *P. articulatum*, Linn. New-Haven, Connecticut, August, 1878.
 8 *P. aviculare*, Linn. Quebec, July, 1884.
 Var. erectum, Roth. Thunder River, August, 1882.
 9 *P. maritimum*, Linn. Pentecost River, August, 1882.
 10 *P. tenue*, Michx. New-Haven, Connecticut, August, 1878.
 11 *P. arifolium*, Linn. Fields, every where, 1883.
 12 *P. sagittatum*, Linn. Mingan Islands, June-July, 1882.
 13 *P. cilinode*, Michx. Cap-Rouge, August, 1884.
 14 *P. convolvulus*, Linn. Thunder River, August, 1882.
 15 *P. dumetorum*, Linn. Environs of Quebec, July, 1884.

2. FAGOPYRUM, Tourn.

- 1 *F. esculentum*, Moench. Fields, August, 1884.

3. RUMEX, Linn.

- 1 *R. salicifolius*, Weinman. Mingan Islands, July, 1882.
 2 *R. crispus*, Linn. Environs of Quebec, July, 1883.
 3 *R. obtusifolius*, Linn. Environs of Quebec, July, 1883.
 4 *R. acetosella*, Linn. Fields, July, 1883.

LVI—THYMELEACEAE.

1. DIRCA, Linn.

- 1 *D. palustris*, Linn. Sainte-Anne de la Pérade, May, 1880.

LXVII—ELAEAGNACEAE.

1. SHEPHERDIA, Nutt.

- 1 *S. canadensis*, Nutt. Mingan Islands, July, 1882.

2. ELAEAGNUS, Nutt.

- 1 *E. argentea*, Pursh, Island of Orleans, June, 1884.

LXVIII—SANTALACEAE.

1. COMANDRA, Nutt.

- 1 *C. umbellata*, Nutt. Mingan Islands, July, 1882.
 2 *C. livida*, Richardson. Tadoussac, July, 1884, (Sir William Meddlycott).

LXIX—CALLITRICACEAE.

1. CALLITRICHE, Linn.

- 1 *C. verna*, Linn. La Canardière, near Quebec: (pools, still water), August, September 1886.

LXX—EUPHORBIACEAE.

1 EUPHORBIA, Linn.

- 1 *E. maculata*, Linn. Ottawa, August, 1887, (Mr. H. M. Ami, F. G. S.
- 2 *E. helioscopia*, Linn. Fields, everywhere, July, 1883.
- 3 *E. peplus* (?), Linn. Beauport, 30th September, 1887, (Quarries).

LXIX—EMPETRACEAE.

1. EMPETRUM, Tourn.

- 1 *E. nigrum*, Linn. Tadoussac, May-June, 1882.

2. COREMA, Don.

- 1 *C. Conradii*, Torrey, Ile au Haut (Maine), (Mrs Flora E. Haines.

LXXII—URTICACEAE.

1. ULMUS, Linn.

- 1 *U. fulva*, Michx. Quebec, May, 1884.
- 2 *U. americana*, Linn. Quebec, Riv. Verte, May, 1883.

2. URTICA, Tourn.

1. *U. gracilis*, Ait. Mingan Islands, July, August, 1882.

3. PILEA, Lindl.

- 1 *P. pumila*, Gray. New Edinburgh, Ottawa, damp woods, 10th August, 1887 (Mr. H. M. Ami, F. G. S.

4. CANNIBIS, Tourn.

- 1 *C. saliva*, Linn. Quebec, August, 1884.

5. HUMULUS, Linn.

- 1 *H. lupulus*, Linn. Quebec, August, 1884.

6. FICUS, Tourn.

- 1 *F. caricus*, Wild. Quebec, 10th October, 1885.

LXXIII—JUGLANDACEAE.

1. JUGLANS, Linn.

- 1 *G. cinerea*, Linn. Island of Orleans, May, 1881.

LXXIV—CUPULIFERAE.

1. QUERCUS, Linn.

- 1 *Q. alba*, Linn. Cap-Rouge, May, 1884.
2 *Q. rubra*, Linn. Sillery ; Island of Orleans, May, 1883.

2. FAGUS, Tourn.

- 1 *F. ferruginea*, Ait. Island of Orleans, May, 1883.

3. CORYLUS, Tourn.

- 1 *C. americana*, Walt. Quebec, May, 1883.
2 *C. rostrata*, Ait. Island of Orleans, May, 1883.

4. OSTRYA, Micheli.

- 1 *O. virginica*, Willd. Island of Orleans, May, 1883.

5. CARPINUS, Linn.

- 1 *C. americana*, Michx. Nicolet ; Sainte-Anne de la Pérade,
May, 1878.

LXXV—MYRICACEAE.

1. MYRICA, Linn.

- 1 *M. gale*, Linn. Lake Saint-Charles, May, 1883.

LXXVI—BETULACEAE.

- 1 *B. lenta*, Linn. Sainte-Anne de la Pérade, May, 1885, Forests.
 2 *B. lutea*, Michx. Sainte-Anne de la Pérade, May, 1878.
 3 *B. alba*, Linn. var. *populifolia*, Spach, Sainte-Anne de la Pérade, May, 1878. Light and poor soil.
 4 *B. papyracea*, Ait. Island of Orleans, May 1883.
 5 *B. pumila*, Linn. Ouatchechou, July, 1882.
 6 *B. glandulosa*, Michx. Mingan Islands, July, 1882.

2. ALNUS, Tourn.

- 1 *A. viridis*, DC. Sainte Anne de la Pérade, Avril, 1878.
 2 *A. incana*, Willd. Gomin-Wood, rear Quebec, May, 1884.

LXXVII—SALICACEAE.

1. SALIX, Tourn.

- 1 *S. candida*, Willd. Mingan Islands, July, 1882.
 2 *S. humilis*, Marshall. Seven Islands Bay, June, 1882.
 3 *S. discolor* Muhl. Island of Orleans, July, 1882.
 4 *S. alba*, Linn. Beauport, June, 1882.
 5 *S. longifolia*, Muhl. Gomin-Road, May, 1882.
 6 *S. vestita*, Pursh. Mingan Islands, July, 1882.
 7 *S. glauca*, Linn. Mingan Islands, June, 1882.
 8 *S. desertorum*, Rich. Calgary, North-West Territory, June, 1885.
 9 *S. reticulata*, Linn. Island of Belle-Isle, August, 1884.
 10 *S. lucida*, Mühl. Quebec, Sainte-Foye, May, June, 1886. Banks of streams, &c.

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- 11 *S. lucida*, Mühl. Cap-Rouge Saint-Foye. Banks of the River
(Abnormal form) May, June, 1886. Island of
Orleans, May, 1887.
 - 12 *S. livida*, Wahl. *Var. occidentalis*, Gray. Environs of Québec,
May-June, 1886. Everywhere.
 - 13 *S. balsamifera*, Barratt. Sainte-Foye, Québec, May, June, 1885.
Low and wet soil and near the water.
 - 14 *S. petiolaris*, Smith, Québec, Saint-Charles river, May, June,
1886.

2. POPULUS, Tourn.

- 1 *P. tremuloides*, Michx. Québec, May, 1883.
 - 2 *P. grandidentata*, Michx. Québec, May, 1883.
 - 3 *P. balsamifera*, Linn. Island of Orleans, May, 1883.
 - 4 *P. monilifera*, Ait. Québec, Saint-Romuald, May, 1886. .
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 GYMnosPERMOUS EXOGENOUS PLANTS.

LXXVIII—CONIFERAE.

1 PINUS, Tourn.

- 1 *P. banksiana*, Lamb. Seven Islands' Bay, June, 1882.
- 2 *P. resinosa*, Ait. Sillery, May, 1883.
- 3 *P. strobus*, Linn., Sillery, May, 1883.

2. ABIES, Tourn.

§ 1 *Picea*, Link.

- 1 *A. nigra*, Poir. Ste. Anne de la Pérade, May, 1878.
- 2 *A. alba*, Michx. Ste. Anne de la Pérade, May, 1878.

§ 2 *Tusga*, Endl.

- 3 *A. canadensis*, Carr. Ste. Anne de la Pérade, May, 1878.

§ 3 *Abies*, Pline.

- 4 *A. balsamea*, Linn. Ste. Anne de la Pérade, May, 1878.

3. LARIX, Tourn.

- 1 *L. americana*, Michx. Ouatchechou, June, 1882.

4. THUYA, Tourn.

- 1 *T. occidentalis*, Linn. Tadoussac, June, 1882.

5. JUNIPERUS, Linn.

- 1 *J. communis*, Linn. Tadoussac, May-June, 1882.
- 2 *J. salina*, Linn. Var. *procumbens*, Pursh, Cawee Islands, June, 1882.

6. TAXUS, Tourn.

- 1 *T. baccata*, Linn. Var. *canadensis*, Gray. Birch Island (Mingan), June, 1882.
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ENDOGENOUS PLANTS.

First division (*Spadiceae*).

Flowers aggregated on a spadix.

LXXIX—ARACEAE.

1. ARISAEMA, Martius.

- 1 *A. triphyllum*, Torr. Island of Orleans, May, June, 1883.

2. CALLA, Linn.

- 1 *C. palustris*, Linn. Sainte-Anne de la Pérade, July, August, 1883.

3. SYMPLOCARPUS, Salisb.

- 1 *S. foetidus*, Salisb. Beauport, May, 1883.

4. ACORUS, Linn.

- 1 *A. calamus*, Linn. Saint-Charles Riv., (near Quebec), July, 1883.

LXXX—TYPHACEAE.

1. TYPHA, Tourn.

- 1 *T. latifolia*, Linn. Saint-Charles Riv. (near Quebec), July, 1884.

2. SPARGANIUM, Tourn.

- 1 *S. simplex*, Hudson, *Var. genuinum*, Gray. Ouatchechou, July, 1882.

LXXXI—NAIADACEAE.

1. ZOSTERA, Linn.

- 1 *Z. marina*, Linn. Coast of Normandy (France), Trinity Bay,
(North Shore), September, 1882.

2. POTAMOGETON, Tourn.

- 1 *P. perfoliatus*, Linn. Saint-Charles River, near Quebec, fresh
water, slow current, July, 1883.
2 *P. pectinatus*, Linn. Gulf of Saint-Lawrence, August, 1882.
3 *P. filiformis*, Linn. Gulf of Saint-Lawrence, August, 1882.

August,

), July,

), July,

ou, July,

ENDOGENOUS PLANTS.

Second division.

PETALOID FLOWERS (PETALOIDEAE).

LXXXII—ALISMACEAE.

1. TRIGLOCHIN, Linn.

- 1 *T. maritimum*, Linn. Mingan Islands, June, July, 1882.

2. ALISMA, Linn.

- 1 *A. plantago*, Linn. *Var. americanum*, Gr. River Saint-Charles, August, 1883.

3 SAGITTARIA, Linn.

- 1 *S. variabilis*, Engelman. Beauport, July, 1883.
Var. hastata, Gr. River Saint-Charles, July, 1883.
Var. gracilis, Gr. River Saint-Charles, July, 1883.

LXXXIII—ORCHIDACEAE.

1. ORCHIS, Linn.

- 1 *O. spectabilis*, Linn. Gomin-Wood, May, July, 1883.

2. HABENARIA, Willd., R. Br.

- 1 *H. viridis*, B. Br. *Var. bracteata*, Reichenbach, Island of Orleans, July, 1883.
2 *H. hyperborea*, R. Br. Island of Orleans, July, 1884.
3 *H. dilatata*, Gr. Mingan Islands, July, 1882.
4 *H. rotundifolia*, Richardson, Mingan Islands, July, 1882,
5 *H. obtusata*, Richardson, Mingan Islands, July, 1882,

- 6 *H. Hookeri*, Torr. Island of Orleans, July, 1883.
- 7 *H. orbiculata*, Torr. Island of Orleans, July, 1883.
- 8 *H. blephariglottis*, Hook. Island of Orleans, July, 1883.
- 9 *H. leucophaea*, Gr. Island of Orleans, July, 1883.
- 10 *H. psycodes*, Gray, Island of Orleans, July, 1883.
- 11 *H. fimbriata*, R. Br. Sainte-Anne de la Pérade (Champlain), July, 1878.

3. GOODYERA, R. Br.

- 1 *G. repens*, R. Br. Island of Orleans, August, 1883.
- 2 *G. pubescens*, R. Br. Sainte-Anne de la Pérade (Champlain), July, 1878.

4. SPIRANTHES, Richard.

- 1 *S. romanzoviana*, Chamisso. Little Sheldrake River, August, 1882.
- 2 *S. cernua*, Richard. Long-Point, Mingan, August, 1882.
- 3 *S. gracilis*, Bigelow. Lobster Bay, August, 1882.

5. LISTERA, R. Br.

- 1 *L. cordata*, R. Br. Mingan Islands, July, 1882.
- 2 *L. convallarioides*, Hook. Mingan Islands, July-August, 1882.

6. ARETHUSA, Gronov.

- 1 *A. bulbosa*, Linn. Gomin-Wood, marshes, June, 1882.

7. POGONIA, Juss.

- 1 *P. ophioglossoides*, Nutt. Saint-Charles (Bellechasse county), August, 1884.

8. CALOPOGON, R. Br.

- 1 *C. pulchellus*, R. Br. Saint-Henri (Levis county), August, 1884.

9. CALYPSO, Salisb.

- 1 *C. borealis*, Salisb. Saint-Paul's Bay (Charlevoix), May, June, 1882.

10. MICROSTILIS, Nutt.

- 1 *M. ophioglossoides*, Nutt. Saint-Ambroise (Quebec County), July, 1884.

11. LIPARIS, Richard.

- 1 *Liliifolia*, Richard. Connecticut (U.-S.), July, 1878.

12. CORALLORHIZA, Haller.

- 1 *C. innata*, R. Br. Island of Orleans, July, 1883.
- 2 *C. multiflora*, Nutt. Island of Orleans, July, 1883.

13. CYPRIPEDIUM, Linn.

- 1 *C. pubescens*, Willd. Mingan Islands, July, 1882.
- 2 *C. spectabile*, Swartz, Nicolet, July, 1875.
- 3 *C. acaule*, Ait. Ouatchechou, July, 1882; Island of Orleans, July, 1883.

LXXXIV—AMARYLLIDACEAE.

1. NARCISSUS, Linn.

- 1 *N. poeticus*, Linn. Quebec; Beauport; June, 1883.

LXXXV—IRIDACEAE.

1. IRIS, Linn.

- 1 *I. versicolor*, Linn. In the neighborhood of Quebec, June, 1884.
- 2 *I. tridentata*, Pursh, Mingan Islands, July, 1882.

2. SISYRINCHIUM, Linn.

- June, 1 *S. bermudiana*, Linn. Island of Orleans, meadows, June, July, 1884.

LXXXVI—SMILACEAE

1. SMILAX, Tourn.

- 1 *S. herbacea*, Linn. Sainte-Anne de la Pêrade, July, 1878.

LXXXVII—LILIACEAE.

1. TRILLIUM, Linn.

- 1 *T. erectum*; Linn. Island of Orleans, May, June, 1884.
 Var. *album* Ph. Gomin-Wood, near Quebec, May, 1884.
 2 *T. cernuum*, Linn. Island of Orleans, June, 1884.
 3 *T. erythrocarpum*, Michx. Island of Orleans, June, 1884.

2. MEDEOLA, Gronov.

- 1 *M. virginica*, Linn. Island of Orleans, June, 1883.

3. ZYGADENUS, Michx.

- 1 *Z. glaucus*, Nutt. Mingan Islands, July, 1882.

4. VERATRUM, Tourn.

- 1 *V. viride*, Ait. Island of Orleans, July, 1884.

5. TOFIELDIA, Hudson.

- 1 *T. palustris*, Hudson, Mingan Islands, July, 1882.
 2 *T. glutinosa*, Willd. Mingan Islands, July, 1882.

6. UVULARIA, Linn.

- 1 *U. grandiflora*, Smith, Batiscan, May and June, 1880.
 2 *U. perfoliata*, Linn. La Canardière, near Quebec, June, 1884.
 3 *U. sessilifolia*, Linn. Sainte Anne de la Pêrade, May, 1878.

7. STREPTOPUS, Michx.

- 1 *S. amplexifolius*, DC. Island of Orleans, July, 1882.
- 2 *S. roseus*, Michx. Ouatchechou, August, 1882.

8. CLINTONIA, Raf.

- 1 *C. borealis*, Raf. Ouatchechou, July, 1882. ; Island of Orleans, June, 1884.

9. SMILACINA, Desf.

- 1 *S. racemosa*, Desf. Island of Orleans, June, 1884.
- 2 *S. stellata*, Desf. Island of Orleans, June, 1884.
- 3 *S. trifolia*, Desf. Island of Orleans, May and June, 1884.
- 4 *S. bifolia*, Ker. Island of Orleans, May and June, 1884.

10. POLYGONATUM, Tourn.

- 1 *P. biflorum*, Ell. Island of Orleans, June, 1884.

11. ASPARAGUS, Linn.

- 1 *A. officinalis*, Linn. Quebec, July, 1885.

12. LILIUM, Tourn.

- 1 *L. philadelphicum*, Linn. North-West, Calgary, prairies, June, 1885.
- 2 *L. canadense*, Linn. Ste. Anne de la Pérade, July, 1884.

13. ERYTHRONIUM, Linn.

- 1 *E. americanum*, Smith, Sillery, May, 1883.

14. ORNITHOGALUM, Tourn.

- 1 *O. umbellatum*, Linn. Quebec, May, 1880.

15. ALLIUM, Linn.

- 1 *A. schoenoprasum*, Island of Orleans, June and July, 1884.

16. HEMEROCALLIS, Linn.

- 1 *H. fulva*, Linn. Quebec, July and August, 1885.

17. TULIPA, Tourn.

- 1 *T. gesneriana*, Linn. Quebec, May and June, 1884.

LXXXVII—JUNCACEAE.

1. LUZULA, DC.

- 1 *L. pilosa*, Willd. Gomin Wood, May and June, 1884.
 2 *L. spadicea*, var. *parviflora*, Desv. Thunder River, August, 1882.
 3 *L. campestris*, DC. Island of Orleans, June, 1884.

2. JUNCUS, Linn.

- 1 *J. effusus*, Linn. Levis, July, 1883 ; Pentecost River, August, 1882.
 2 *J. balticus*, Dethard, Mingan Islands, July 1882.
 3 *J. bufonius*, Linn. Thunder River, August, 1882.
 4 *J. Girardi*, Loisel. Beaumont Lake, August, 1883.
 5 *J. Vaseyi*, Engelm. Island of Orleans, August, 1884.
 6 *J. nodosus*, Linn. St. Charles River, August, 1883.
 7 *J. tenuis*, Willd. Valcartier, August, 1881 ; Beaumont, August, 1883.
 8 *J. alpinus*, Villars. Var *insignis*, Gr. Island of Orleans, August, 1884.
 9 *J. castaneus*, Macoun, Gamache Bay (Anticosti), 5th August, 1881.

LXXXVII—PONTEDERIAACEAE.

1. PONTEDERIA, Linn.

- 1 *P. cordata*, Linn. Nicolet (Port St. Francis), July and August, 1878.

 ENDOGENOUS GLUMACEOUS PLANTS.

August,

XC—CYPERACEAE—(Sedges).

1. CYPERUS, Linn.

- 1 *C. strigosus*, Linn. Discharge of Rideau Canal, Ottawa, swampy soil, 8th August, 1887.

2. DOLICMIUM, Richard.

- 1 *D. spathaceum*, Persoon, Beaumont (Bellechasse), August, 1881.

3. ELEOCHARIS, R. Br.

- 1 *E. obtusa*, Schultes. Muddy soil, Notre-Dame de Lévis, August, 1883.
 2 *E. palustris*, B. Br. Ouatchechou, July, 1882.
 3 *E. tenuis*, Schultes. Island of Orleans, August, 1883.
 4 *E. ovata*, R. Br. Ponds, France.
 5 *E. acicularis*, R. Br. Thunder River, August, 1882.

4. SCIRPUS, Linn.

- 1 *S. caespitosus*, Linn. Harbor Island, (Mingan), July, August, 1882.
 2 *S. pungens*, Wahl. Ouatchechou, July, 1882.
 3 *S. atrovirens*, Muhl. Quebec, August, 1884; Riv. Mingan, July, August, 1882.
 4 *S. eriophorum*, Michx. *Var. cyperinus*, Kuntz. Saint-Sauveur (Quebec), August, 1884; Thunder River, August, 1882.

5. *ERIOPHORUM*, Linn. (Cotton-grass).

- 1 *E. alpinum*, Linn. Saint-Charles Island (Mingan), July, 1882.
- 2 *E. vaginatum*, Linn. Grand-Isle (Mingan), July, 1882.
- 3 *E. russeolum*, Fries, Ouatchechou, June, July, 1882.
- 4 *B. virginicum*, Linn. Valcartier (Quebec), August, 1883.
- 5 *E. polystachion*, Linn. Ouatchechou, July, 1882 ; Hunting Island, (Mingan), July, 1882 ; Saint-Sauveur (Quebec), July, 1884.

6. *RHYNCHOSPORA*, Vahl.

- 1 *R. alba*, Vahl.

7. *CAREX*, Linn. Sedge).

- 1 *C. pauciflora*, Lightfoot, Ouatchechou, swamps, July, 1882.
- 2 *C. polytrichoides*, Muhl. Beaumont, swamps, August, 1881.
- 3 *C. vulpinoides*, Michx. Beaumont ; Beauport ; La Canardière, July, 1881-1884.
- 4 *C. stipata*, Muhl. Anse à l'eau (Saguenay) ; Pentecost River ; Island of Orleans, August, 1882-1884.
- 5 *C. tenella*, Schk. Island of Orleans, August, 1884.
- 6 *C. trisperma*, Dew. West Point of Mingan River, August, 1882.
- 7 *C. canescens*, Linn. Var. *vtilis*, Gray. Ouatchechou ; low soil, July, 1882 ; Saint-Charles Island, (Mingan), July, 1882.
- 8 *C. sterilis*, Wild. Tadoussac, low soil, August, 1883.
- 9 *C. echinита*, Linn. Pentecost River, August, 1872.
- 10 *C. scoparia*, Schk. Saint-Ambroise, low soil, July, August, 1883.
- 11 *C. lagopodioides*, Schk. Island of Orleans, muddy soil, August, 1884.

- 12 *C. cristata*, Schk. *Var mirabilis*, Boott, Pentecost River, August, 1882.
- 13 *C. adusta*, Boott, Harbor Island (Mingan), July, August, 1882.
- 14 *C. vulgaris*, Fries, Mingan River, July, 1882.
- 15 *C. aquatilis*, Wahl. Jacques-Cartier River, Valcartier, county of Quebec, 20th August, 1881.
- 16 *C. salina*, Wahl Ouatchechou, June and July, 1882.
- 17 *C. maritima*, Vahl. Ouatchechou ; Manicouagan, July, 1882.
- 18 *C. crinita*, Lam. St. Sauveur (Quebec), July, 1883.
- 19 *C. rariflora*, Smith, Ouatchechou, June and July, 1882.
- 20 *C. irrigua*, Smith, Thunder River, August, 1882.
- 21 *C. aurea*, Nutt., *var. androgynæa* Ste. Geneviève Islet, muddy shore, July, 1882 ; Island of Orleans, 1884.
- 22 *C. vaginata*, Fausch. Harbor Island (Mingan), July, 1882.
- 23 *C. eburnea*, Boott. Mingan River, sand, July, 1882.
- 24 *C. pedunculata*, Muhl. Island of Orleans, May and June, 1884.
- 25 *C. Novae-Angliæ*, Schw. Harbor Island (Mingan), July, 1882.
- 26 *C. varia*, Muhl. Plains of Abraham, Quebec, July, 1884.
- 27 *C. arcata*, Boott, Island of Orleans, July and August, 1884.
- 28 *C. capillaris*, Linn. Esquimaux Island, July, 1882.
- 29 *C. flava*, Linn. Pentecost River, August, 1882.
- 30 *C. lanuginosa*, Michx. West of St. Sauveur (Quebec), July and August, 1884.
- 31 *C. tentaculata*, Muhl. Saint-Sauveur, June and July, 1884.
- 32 *C. intumescens*, Rudge, Plains of Abraham (Quebec) July 1884.
- 33 *C. utriculata*, Boott, West of Saint-Sauveur (Quebec), July, 1884.
- 34 *C. oligosperma*, Schk. Thunder River, August, 1882.

- 35 *C.iliaris*, Michx. Pentecost River, August, 1882.
 36 *C. concinna*, R. Br. Sainte-Geneviève Islet, July, 1882.
 37 *C. vesicaria*, Linn. Calgary, North-West Territory, June, 1885.
 38 *C. glareosa* (?) Ouatchechou, June and July, 1882.
 39 *C. angustastoides* Lav. Valcartier, Quebec, August, 1881.

7. BLYSMUS, Panz.

- B. rufa*, Panz. Hunting Island (Mingan), June, 1882.

XCI—GRAMINEAE. (Grasses.)

1. ZIZANIA (Gronov.)

- 1 *Z. aquatica*, Linn. Beauport ; Island of Orleans, August, 1884.

2. PHLEUM, Linn.

- 1 *P. pratense*, Linn. Pentecost River, July and August, 1882.
 2 *P. arenarium*, Linn. Sand, France.

3. AGROSTIS, Linn.

- 1 *A. setacea*, Willd. Thunder River, August, 1882.
 2 *A. canina*, Linn. Sandy beach, Mingan River, July, 1882.
 3 *A. vulgaris*, With. Quebec ; Sainte-Catherine (Jacques-Cartier River), July, 1884.
 4 *A. alba*, Linn. Quebec ; Beaumont Lake, July and August, 1881.

4. CINNA, Linn.

- 1 *C. pendula*, Gray, Sainte-Catherine (Jacques-Cartier? River), August, 1884.

5. BRACHYELYTRUM, Beauv.

- 1 *B. aristatum*, Beauv. Montmorency River, August, 1884.

6. CALAMAGROSTIS, Adans.

- 1 *C. canadensis*, Beauv. Beaumont Lake (Bellechasse), August, 1881.
- 2 *C. Langsdorffii*, Trinius, Thunder River, August, 1882.
- 3 *C. stricta*, Trin. Gamache Bay (Anticosti), August, 1882.

7. ORYZOPSIS, Michx.

- 1 *O. asperifolia*, Michx. Gomin-Wood (Quebec), May, 1883.
- 2 *O. canadensis*, Torr. Manowin Island (Seven Islands Bay), June, 1882.

8. SPARTINA, Schreber.

- 1 *S. cynosuroides*, Willd. Pentecost River, August, 1882.

9. DACTYLIS, Linn.

- 1 *D. glomerata*. Quebec (Beauport), June, 1884.

10. KOELERIA, Persoon.

- 1 *K. cristata*, Pers. Brandon, North-West Territory, June, 1885.

11. EATONIA, Raf.

- 1 *E. pennsylvanica*, Gray. L'Ange-Gardien, August, 1884.

12. GLYCERIA, R. Br. & Trin.

- 1 *G. canadensis*, Trin. Thunder River, August, 1882.
- 2 *G. elongata*, Trin. Pentecost River. August, 1882.
- 3 *G. nervata*, Trin. Island of Orleans, July and August, 1883.
- 4 *G. maritima*, Wahl. Sainte-Geneviève Islet (Mingan), July, 1882.
- 5 *G. parviflora*, Michx. Saint-Pierre (Island of Orleans), July and August, 1884.

13. CATABROSA, Beauv.

- 1 *C. aquatica*, Beauv. Pentecost River, August, 1882.

14. POA, Linn.

- 1 *P. compressa*, Linn. Saint-Charles River, (Quebec), July, 1883.
- 2 *P. alpina*, Linn. Harbor-Island (Mingan), July and August, 1882.
- 3 *P. serotina*, Ehrhart, Beauport, August, 1884.
- 4 *P. pratensis*, Linn. Quebec, July, 1884.
- 5 *P. debilis*, Torrey. Island of Orleans, August, 1884.
- 6 *P. glumaris*, Trin. Sainte-Geneviève Islands, (Mingan), July, 1882.

15. BRIZA, Linn.

- 1 *B. maxima*, Linn. Lotbibière, August, 1883.

16. FESTUCA, Linn.

- 1 *F. ovina*, Linn. Plains of Abraham (Quebec), July, 1884.
- 2 *F. duriuscula*, Linn. Gamache Bay (Anticosti), August, 1882.
- 3 *F. elatior*, Linn. Beauport, July, 1884.

17. CYNOSURUS, Linn.

- 1 *C. cristatus*, Linn. Quebec, near the Parliament Building, 21st June, 1884.

18. BROMUS, Linn.

- 1 *B. secalinus*, Linn. Mingan River, August, 1882.
- 2 *B. racemosus*, Linn. Quebec, August, 1884.
- 3 *B. mollis*, Linn. Quebec, August, 1884.
- 4 *B. ciliatus*, Linn. Pentecost River, August, 1882.

19. LOLIUM, Linn.

- 1 *L. perenne*, Linn. Quebec ; Jacques Cartier River, July and August, 1884.

20. TRITICUM, Linn.

- 1 *T. repens*, Linn. Ste. Foye Road (Quebec), July and August, 1884.
- 2 *T. caninum*, Linn. Environs of Quebec, July and August, 1884.
- 3 *T. vulgare*, Villars, Pentecost River, August, 1882.
- 4 *T. sativum*, Linn. Quebec (Glacis), August, 1884.

21. HORDEUM, Linn.

- 1 *H. vulgare*, Linn. Pentecost River, August, 1882.
- 2 *H. jubatum*, Linn. Gamache Bay (Anticosti), August, 1882.

22. ELYMUS, Linn.

- 1 *E. virginicus*, Linn. Ste. Foye Road, July and August, 1883.
- 2 *E. mollis*, Trin. Gamache Bay (Anticosti), August, 1882.

23. DANTHONIA, DC.; Willd.

- 1 *E. spicata*, Beauv. Montmorency River, July and August, 1884.

24. AVENA, Linn.

- 1 *A. sativa*, Linn. Near Quebec, August, 1884.
- Var. *secunda*, Wood, Quebec, August, 1884.

25. TRISETUM, Persoon.

- 1 *T. subspicatum*, Beauvais, Var. *molle*, Gray. Manowin Island, (Seven Islands), June, 1882.

26. AIRA, Linn.

- 1 *A. praecox*, Linn. New Jersey (United States), July, 1880.
- 2 *A. flexuosa*, Linn. Gamache Bay (Anticosti), August, 1882.
- 3 *A. caespitosa*, Linn. L'Ange Gardien, August, 1884.

27. *ARRHENATHERUM*, Beauv.

- 1 *A. avenaceum*, Beauv. Quebec, August, 1884.

28. *HIEROCHLOA*, Gm.

- 1 *H. borealis*, Roem. and Schultes, Pentecost River, August, 1882.

29. *ANTHOXANTUM*, Linn.

- 1 *A. odoratum*, Linn. Island of Orleans, July, 1884.

30. *PHALARIS*, Linn.

- 1 *P. canariensis*, Linn. Quebec, August, 1884.

31. *MILIUM*, Linn.

- 1 *M. effusum*, Linn. Island of Orleans, July, 1884.

32. *PANICUM*, Linn.

- 1 *P. capillare*, Linn. St. Charles River (Quebec), July, 1883.
2 *P. dichotomum*, Linn. Quebec, July, 1883.
3 *P. crus-galli*, Linn. St. Charles River (Quebec), July, 1883.

SETARIA, Beauv.

- 1 *S. glauca*, Beauv. Quebec, July, 1884.
2 *S. viridis*, Beauv. Palais (Quebec), July, 1884.
3 *S. italica*, Kunth. Quebec (vacant lots), July, 1885.

34. *ANDROPOGON*, Linn.

- 1 *A. furcatus*, Muhl. Island of Orleans, August, 1885.

CRYPTOGAMOUS-ACROGENOUS PLANTS.

XCII—EQUISETACEAE. (Horsetails.)

1. EQUISETUM, Linn.

- 1 *E. arvense*, Linn. La Canardière, June and July, 1884.
- 2 *E. pratense*, Ehrh. Cap Rouge ; La Canardière, near Quebec, May and June, 1884. Fresh soil.
- 3 *E. sylvaticum*, Linn. Gomin Wood, June and July, 1884.
- 4 *E. limosum*, Linn. St. Sauveur (Quebec), June and July, 1884 ; Mingan River, August, 1882.
- 5 *E. scirpoides*, Michx. Beauport, June and July, 1884.
- 6 *E. variegatum*, Schleicher, Banks of the River Montmorency, June and July, 1884.
- 7 *E. hyemale*, Linn. Wood, St. Joseph (Portneuf county), September, 1884.

XCIII—FILICES. (Ferns.)

1. POLYPODIUM, Linn.

- 1 *P. vulgare*, Linn. Island of Orleans, rocks, June, 1883.
- 2 *P. incanum*, Sw. Florida (U.S.), April, 1884.

2. ADIANTUM, Linn.

- 1 *A. pedatum*, Linn. Levis, August, 1884 ; Cap Rouge, August, 1884.

3. PTERIS, Linn.

- 1 *P. aquilina*, Linn. Environs of Quebec, August, 1883 ; Thunder River, August, 1882.
- 2 *P. serrulata*. Canary Islands.

4. CHEILANTHES, Sw.

- 1 *C. vestita*, Sw. Pennsylvania (U.S.), 1884.

5. PELLAEA, Link.

- 1 *P. gracilis*, Hook. Mingan Islands, June, 1882.

6. ASPLENIUM, Linn.

- 1 *A. trichomanes*, Linn. Near Montreal, 1882.
- 2 *A. ebeneum*, Ait. Lower Canada, near the line between Quebec and Ontario, 1880.
- 3 *A. ruta-muraria*, Linn. Vermont (U.S.), 1878.
- 4 *A. angustifolia*, Michx. Island of Orleans, July, 1883; Owen Sound (Ont.), 1885; Philadelphia (Pennsylvania, U.S.), 1876.
- 5 *A. thelypteroides*, Michx. Island of Orleans, July, 1883.
- 6 *A. filix-foemina*, Bernh. Island of Orleans, August, 1883; Levis, July, 1883.
- 7 *A. murarium*. East coast of Scotland, 1880.

7. SCOLOPENDRIUM, Smith.

- 1 *S. vulgare*, Smith. New York State, 1878; Owen Sound (Ont), 1875.

8. CAMPTOSORUS, Link.

- 1 *C. rhizophyllus*, Link. Connecticut (U.S.), July, 1878; Chelsea, (Ottawa Co., Quebec,) *Fide*, H. M. Ami, M.A.

9. PHEGopteris, Fée.

- 1 *P. polypodioides*, Fée. Ouatchechou, July, 1882.
- 2 *P. hexagonoptera*, Fée. Toronto (Ont.), July, 1878.
- 3 *P. dryopteris*, Fée. Mingan Islands, July and August, 1882.

10. ASPIDIUM, Swartz.

- 1 *A. thelypteris*, Sw. Connecticut (U.S.), July, 1878.
- 2 *A. noveboracense*, Sw. Levis, September, 2884.
- 3 *A. spinulosum*, Sw. St. Charles River, July, 1883 ; Lake St. Joseph, 1883 ; Sheldrake River ; July and August, 1882.
Var. intermedium, Gray. Sheldrake River ; Mingan Point, August, 1882.
Var dilatatum, Sw. Island of Orleans ; Levis, August, 1884.
- 4 *A. cristatum*, Sw. Cap Rouge, August, 1883.
- 5 *A. filix-mas*, Sw. West Coast of Scotland, July and August, 1884.
- 6 *A. marginale*, Sw. Etchemin River, August, 1883.
- 7 *A. acrostichoides*, Sw. Ste. Anne de la Pérade, August, 1884.
Var. incisum, Gray. Toronto (Ont.), August, 1875.
- 8 *A. lonchitis*, Sw. Toronto (Ont.), 1875.
Var. incisum. Owen Sound (Ont.), August, 1875.
- 9 *A. aculeatum*, Sw. Island of Orleans, July, 1883.
Var. Braunii, Koch, Island of Orleans, July, 1883.
- 10 *A. marinum*, Linn. British Isles, 1884.

11. CYSTOPTERIS, Bernhardi.

- 1 *C. bulbifera*, Bernh. Lorette Falls, August, 1881.
- 2 *B. fragilis*, Bernh. Mingan Islands, July, 1882.

12. STRUTHIOPTERIS, Wild.

- 1 *S. germanica*, Willd. Ste. Anne de la Pérade, August, 1878.

13. ONOCLEA, Linn.

- 1 *C. sensibilis*, Linn. Thunder River, August, 1882.

14. WOODSIA, R. Br.

- 1 *W. obtusa*, Torr. New-Jersey (U.-S.), August, 1878.
- 2 *W. ilvensis*, R. Br. Island of Orleans, July, 1883 ; Pentecost River, August, 1882.
- 3 *W. glabella*, R. Br. Island of Orleans, June, July, 1883.
- 4 *W. hyperborea*, Brown, Harbor Island (Mingan), June, July, 1882.

15. DICKSONIA, L'hér.

- 1 *D. punctilobula*, Kunze, Lévis ; Island of Orleans ; Sillery, July, August, 1883.

16. SCHIZAEA, Smith.

- 1 *S. pusilla*, Pursh, Pine Forests, New-Jersey, (U.-S.), August, 1878.

17. OSMUNDA, Linn.

- 1 *O. regalis*, Linn. Lévis, August, 1880.
- 2 *O. claytoniana*, Linn. Island of Orleans, August, 1881 ; Thunder River, August, 1882.
- 3 *O. cinnamomea*, Linn. Thunder River, August, 1882.

18. BOTRICHUM, Sw.

- 1 *B. lunaria*, Sw. Anticosti, August, 1882.
- 2 *B. virginicum*, Sw. Island of Orleans, June, July, 1881.
B. virginicum, Sw. *Var. simplex*, Vermont (U.-S.), July, 1878.
- 3 *B. ternatum*, *var. lunarioides*, Sw. Island of Orleans, July.
- 4 *B. matricariaefolium*, Al. Br. Gamache Bay (Anticosti), August, 1882.

19. OPHIOGLOSSUM, Linn.

- 1 *O. vulgatum*, Linn. Connecticut (U.-S.), August, 1878.

20. GYMNOGRANUM.

- 1 *G. leptophyllum*, Canary Islands.

XCIV—LYCOPODIACEAE. (Club-Mosses).

1. LYCOPODIUM, Linn., Spreng.

- 1 *L. lucidulum*, Michx. Kamouraska, June, July, 1884 ; wood, wet soil.
 2 *L. annotinum*, Linn. Mingan River, August, 1882.
 3 *L. dendroideum*, Michx. Esquimaux Island, July, 1882.
 Var. obscurum, Gr. New-Haven (Connecticut, U.-S.), September, 1878.
 3 *L. clavatum*, Linn. Island of Orleans, July, 1883.
 5 *L. complanatum*, Linn. Mingan Harbor, June, 1882.
 Var. sabinaefolium, Gr. Mingan, Seven Island Bay, June, 1882.

2. SELAGINELLA, Beauv.

- 1 *S. rupestris*, Spreng. Tadoussac, 8th September, 1882.

XCV—MUSCI. (Mosses).

1—SPHAGNACEAE.

1. SPHAGNUM, Dill.

- 1 *S. acutifolium*, Ehrh.
 2 *S. rubellum*, Wils.
 3 *S. fimbriatum*, Wils.
 4 *S. cuspidatum*, Ehrh. *Var. plumosum*, Schimper ; *Var. recurvum* Beauv.
 5 *S. squarrosum*, Persoon.
 6 *S. compactum*, Brid.

- 7 *S. contortum*, Schultz. *Var. obesum*, Schimper; *Var. subsecundum*, Nees.
- 8 *S. molluscum*, Bruch.
- 9 *S. cymbifolium*, Ehrh.

II—ANDREAEACEAE.

1. ANDREAEAE, Ehrh.

- 1 *A. alpina*, Dill. & Linn.
- 2 *A. rupestris*, Linn. & Hedw.
- 3 *A. Rothii*, Web & Mohr.
- 4 *A. nivalis*, Hooker.

III—BRYACEAE.

1. PHASCUM, Linn. (In part.)

- 1 *P. serratum*, Schreb.
- 2 *P. sessile* (?) *var. stenophyllum*, Br. & Sch.
- 3 *R. curvifolium*, Dicks.
- 4 *P. muticum*, Schreb.
- 5 *P. triquetrum*, Spruce.
- 6 *P. floerkeanum*, Web. and Mohr
- 7 *P. curvicolium*, Hedw.
- 8 *P. cuspidatum*, Schreb.
- 9 *P. hyoides*, Dicks.
- 10 *P. patens*, Hedw.
- 11 *P. nitidum*, Hedw.
- 12 *P. subulatum*, Linn.
- 13 *P. alternifolium*, Br. & Sch.
- 14 *P. crispum*, Hedw.

dum,

15 *P. multicapsulare*, Linn.16 *P. rostellatum*, Schreb.17 *P. rectum*, Smith.2. *ARCHIDIUM*, Brid.1 *A. phascoides*, Bridel.3. *GYMNOSTOMUM*, Hedw.1 *G. rupestre*, Schwaegr.2 *G. curvirostrum*, Hedw.3 *G. tenue*, Schrader.4 *G. squamosum*, Nees & Hornsch.5 *G. microstomum*, Hedw.6 *G. tortile*, Schwaegr.4. *ANOECTANGIUM*, Schwaegr.1 *A. compactum*, Schwaegr.5. *WEISIA*, Hedw.1 *W. controversa*, Hedw.2 *W. mucronata*, Br. & Sch.3 *W. cirrhata*, Hedw.4 *W. crispula*, Hedw.5 *W. verticillata*, Brid.6. *RHABDOWEISIA*, Br. & Sch.1 *R. fugax*, Br. & Schimp.2 *R. denticulata*, Br. & Schimp.7. *CYNODONTIUM*, Schimp.1 *C. Bruntoni*, Br. & Sch.

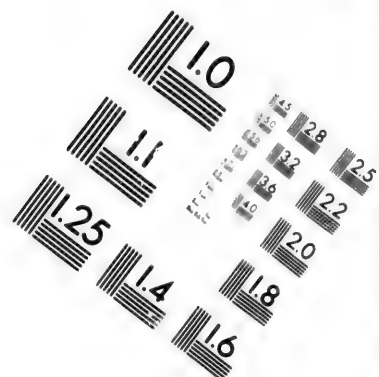
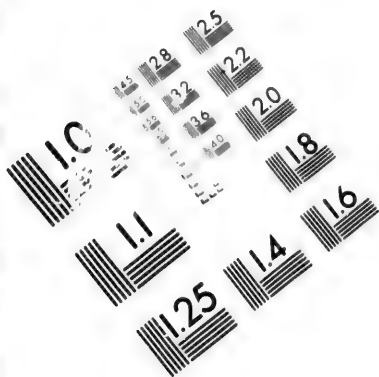
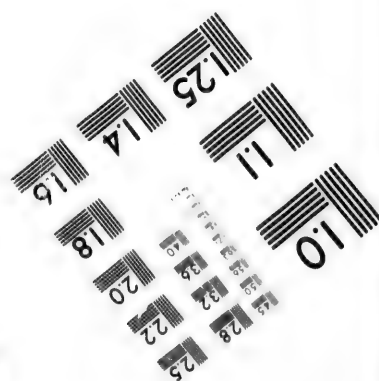
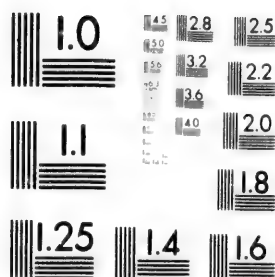
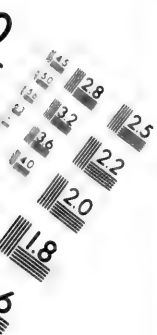


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8. DICRANUM, Hedw.

- 1 *E. polycarpum*, Ehrh ; var. *strumiferum*, Schimp.
- 2 *D. virens*, Hedw.
- 3 *D. pellucidum*, Hedw. ; var. *serratum*, Schimp.
- 4 *D. squarrosum*, Schrad.
- 5 *D. Schreberi*, Swartz.
- 6 *D. crispum*, Hedw.
- 7 *D. varium*, Hedw.
- 8 *D. rufescens*, Turner.
- 9 *D. cerviculatum*, Hedw.
- 10 *D. subulatum*, Hedw.
- 11 *D. heteromallum*, Hedw.
- 12 *D. Blyttii*, Br. & Sch.
- 13 *D. Starkii*, W. & Sch.
- 14 *D. falcatum*, Hedw.
- 15 *D. schottianum*, Turn.
- 16 *D. fuscescens*, Turn.
- 17 *D. scoparium*, Hedw.
- 18 *D. palustre*, La Pyl. & Brid.
- 19 *D. Schraderi*, Web. & Mohr.
- 20 *D. majus*, Turner.

9. CAMPYLOPUS, Brid.

- 1 *C. densus*, var. *fragilis*, Schleich.
- 2 *C. torfaceus*, Br. & Schimper.
- 3 *C. flexuosus*, Brid.
- 4 *C. longipilus*, Brid.

IV—FISSIDENTEAE.

1. FISSIDENS, Hedw.

- 1 *F. exilis*, Hedw.
- 2 *F. viridulus*, Linn. var. *pusillus* (?) ; var. *crassipes*, Wils. ; var. *incurvus*, Schw. ; var. *Lylei*, (?)
- 3 *F. bryoides*, Hedw.
- 4 *F. Hallii*, Austin.
- 5 *F. osmundoides*, Sw. ; Hedw.
- 6 *F. asplenoides*, var. *polyphyllus*, (?)
- 7 *F. adiantoides*, Hedw.
- 8 *F. taxifolius*, Hedw.
- 9 *F. tamarindifolius* (?)

V—LEUCOBRYEAE.

1. LEUCOBRYUM, Hampe

- 1 *L. glaucum*, Hampe.

VI—CERATODONTEAE.

1. CERATODON, Brid.

- 1 *C. purpureus*, Brid.

2. DISTICHIMUM, Br. & Schimp.

- 1 *D. capillaceum*, Br. and Sch.
- 2 *D. inclinatum*, Br. and Sch.

VII—SELIGERIEAE.

2. ANODUS, Bruch and Schimp.

- 1 *A. donianus*, Br. and Sch.

2. SELIGERIA, Bruch and Schimp.

- 1 *S. calcarea*, Br. and Sch.
- 2 *S. recurvata*, and Sch.
- 3 *S. pusilla*, Br. Sch.

3. BLINDIA, Br. and Schimp.

- 1 *B. acuta* Br. and Sch.

4. BRACHYODUS, Fuern.

- 1 *B. trichodes*, Fuern.

5. CAMPYLOSTELEUM, Br. and Sch.

- 1 *C. saxicola*, Br. and Sch.

6. ARCTOA, Br. and Schimp.

- 1 *A. fulvella*, Br. and Sch.

7. STYLOSTEGIUM, Br. and Schimp.

- 1 *S. coespiticum*, Br. and Sch.

VIII—POTTIEAE.

1. POTTIA, Ehrh.

- 1 *P. cavifolia*, Ehrh. var. *gracilis*, Br. and Schimp.
- 2 *P. minutula*, Fuern. var. *conica*, Br. and Sch.
- 3 *P. truncata*, Br. and Sch.
- 4 *P. Wilsoni*, Br. and Sch.
- 5 *P. crinita*, Wilson.
- 6 *P. Heimii*, Fuern.

2. ANACALYPTA, Roehl.

- 1 *A. starkeana*, Fuern. var. *brachyodus*, (?)
- 2 *A. lanceolata*, Roehl.

3. DIDYMODON, Hedw.

- 1 *D. rubellus*, Br. and Sch.
- 2 *D. luridus*, Hornsch.
- 3 *D. cylindricus*, Br. and Sch.
- 4 *D. flexifolius*, Hook and Tayl.

4. TRICHOSTOMUM, Smith.

- 1 *T. tophaceum*, Brid.
- 2 *T. mutabile*, Bruch.
- 3 *T. crispulum*, Bruch.
- 4 *T. rigidulum*, Smith ; *var densum*, (?)
- 5 *T. flexicaule*, Br. and Sch.
- 6 *T. homomallum*, Br. and Sch.
- 7 *T. glaucescens*, Hedw.

5. BARBULA, Hedw. VEL. TORTULA, Hedw.

- 1 *Tortula rigida*, Schultz ; Turn.
- 2 *T. ambigua*, Br. and Sch.
- 3 *T. aloides*, Br. and Sch.
- 4 *T. unguiculata*, Hedw.
- 5 *T. fallax*, Hedw.
- 6 *T. vinealis*, Spruce.
- 7 *T. tortuosa*, Web. and Mohr.
- 8 *T. squamosa*, (*squamigera*), De Not.
- 9 *T. revoluta*, Schwaegr.
- 10 *T. hornschuchiana*, Schultz.
- 11 *T. convoluta*, Hedw.
- 12 *T. cuneifolia*, Dicks.

- 13 *T. muralis*, Timm. *Var. rupestris*.
- 14 *T. marginata*, Br. and Sch.
- 15 *T. subulata*, Brid.
- 16 *T. latifolia*, Br. and Sch.
- 17 *T. laevipila*, Brid.
- 18 *T. ruralis*, Hedw. *Var. rupestris* ; *var. foliis obtusis*. (?)
- 19 *T. Mülleri*, Br. and Sch.
- 20 *T. papillosa*, Wilson.

IX—GRIMMIEAE.

1. CINCLIDOTUS, Beauv.

- 1 *C. riparius*, U. Am. *Var. terrestris*, Br. and Sch.
- 2 *C. fontinaloides*, Beauv.

2. GRIMMIA, Ehrh.

Sub-genus Schistidium, Lesq.

- 1 *Schistidium confertum*, Br. and Sch.
- 2 *S. apocarpum*, Br. and Sch. *Var. rivulare*.
- 3 *S. maritimum*, Br. and Sch.

3. GRIMMIA (proper), Lesq.

- 1 *G. pulvinata*, Smith. *Var. obtusa*, Müell.
- 2 *G. orbicularis*, Br. and Sch.
- 3 *G. spiralis*, Hook and Tayl.
- 4 *G. torta*, Hornsch.
- 5 *G. trichophylla*, Grev.
- 6 *G. Schultzii*, Brid.
- 7 *G. patens*, Br. and Sch.
- 8 *G. donniana*, Smith.

- 9 *G. ovata*, Web. and Mohr.
- 10 *G. leucophaea*, Grev.
- 11 *G. unicolor*, Grev.
- 12 *G. atrata*, Müllich.

4. RACOMITRIUM, Brid.

- 1 *R. ellipticum*, Br. and Sch.
- 2 *R. aciculare*, Brid.
- 3 *R. protensum*, A. Braun.
- 4 *R. sudeticum*, Br. and Sch.
- 5 *R. fasciculare*, Brid.
- 6 *R. heterostichum*, Brid. *Var. alopecurum* ; *ver. gracilescens*.
- 7 *R. canescens*, Brid.
- 8 *R. lanuginosum*, Brid.

5. HEDWIGIA, Ehrh.

- 1 *H. ciliata*, Hedw. *Var. striata*, Schimper.

6. HEDWIGIDIUM, Br. and Sch.

- 1 *H. imberbe*, Br. and Sch.

X—ORTHOTRICHEAE.

1. PTYCHOMITRIUM, Br. and Sch.

- 1 *P. polyphyllum*, Hoffm.

2. GLYPHOMITRIUM, Br. and Sch.

- 1 *G. Daviesii*, Shwaegr.

3. ZYGODON, Hook. ; AMPHORIDIUM, Sch.

- 1 *Amphoridium lapponicum*, Sch.
- 2 *A. Mougeottii*, Sch.

3 *Zygodon viridissimus*, Br.

4 *Z. conoideus*, Dicks.

4. ORTHOTRICHUM, Hedw.

1 *O. anomalum*, Hedw.

2 *O. cupulatum*, Hoffm.

3 *O. tenellum*, Hornsch.

4 *O. stramineum*, Hornsch.

5 *O. affine*, Schrad.

6 *O. rupestre*, Schleich.

7 *O. speciosum*, Nees.

8 *C. Lyellii*, Hook. and Tayl.

9 *O. rivulare*, Turn

10 *O. diaphanum*, Br. and Sch.

11 *O. leiocarpum*, Br. and Sch.

12 *O. pulchellum*, Smith.

13 *O. Ludwigii*, Schwaegr.

14 *O. crispulum*, Hornsch.

15 *O. crispum*, Hedw.

16 *O. Bruchii*, Brid.

17 *O. Drummondii*, H. and Grev.

18 *O. Hutchinsiae*, Smith.

19 *O. phyllanthum*, Br. and Sch.

5. ENCALYPTA, Schreb.

1 *E. commutata*, Nees and Hornsch.

2 *E. vulgaris*, Hedw.

3 *E. ciliata*, Hedw.

4 *E. rhabdocarpa*, Schwaegr.

5 *E. streptocarpa*, Hedw.

XI--TETRAPHIDEAE.

1. TETRAPHIS, Hedwig.

1 *T. pellucida*, Hedw.2 *T. repanda*, Funcke.

2. TETRODONTIUM, Schwaegr.

1 *T. brownianum*, Br. and Schimp.

XII--DISCELIEAE.

1. DISCELIUM, Brid.

1 *D. nudum*, Brid.

XIII--SCHISTOSTEGEAE.

1. SCHISTOSTEGA, Mohr.

1 *S. osmundacea*, Web. and Mohr.

2. CEDIPODIUM, Schwaegr.

1 *C. griffithsianum*, Schwaegr.

XIV--SPLACHNEAE.

1. DISSODON, Grev. and Arn.

1 *D. splachnoides*, Grev. and Arn.

2. TAYLORIA, Hook.

1 *T. serrata*, Br. and Sch.

3. TETRAPLONDON, Br. and Schimp.

1 *T. angustatus*, Br. and Sch.2 *T. mnioides*, Br. and Sch.

4. SPLACHNUM, Linn.

- 1 *S. sphaericum*, Linn.
- 2 *S. vasculosum*, Linn.
- 3 *S. ampullaceum*, Linn.

XV—PHYSCOMITRIEAE.

1. PHYSCOMITRIUM, Brid.

- 1 *P. ericetorum*, De Not.
- 2 *P. fasciculare*, Br. and Sch.
- 3 *P. pyriforme*, Brid.
- 4 *P. sphaericum*, Br. and Sch.

2. BARTRAMIDULA, Br. and Sch.

- 1 *B. Wilsoni*, Br. and Sch.

3. ENTOSTHODON, Schwaegr.

- 1 *E. Templetoni*, Schwaegr.

4. FUNARIA, Schreb.

- 1 *F. hygrometrica*, Hedw. ; Libth.
- 2 *F. hibernica*, Hook.
- 3 *F. Muhlenbergii*, Schwaegr.

XVI—BARTRAMIEAE.

1. BARTRAMIA, Hedw.

- 1 *B. ithyphylla*, Brid.
- 2 *B. pomiformis*, Hedw.
- 3 *B. halleriana*, Hedw.
- 4 *B. rigida*. (?)

- 5 *B. fontana*, Brid.
- 6 *B. calcarea*, Br. and Sch.
- 7 *B. Ederi*, Schwaegr.
- 8 *B. arcuata*, Brid.
- 9 *B. conostoma*, Br. and Sch.

2. CONOSTOMUM, Swartz.

- 1 *C. boreale*, Swartz.

XVII—MEESIEAE.

1. CATOSCOPIUM, Brid.

- 1 *C. nigratum*, Brid.

2. AMBLYODON, Beauv.

- 1 *A. dealbatus*, Beauv.

3. MEESIA, Hedw.

- 1 *M. uliginosa*, Hedw.

4. PALUDELLA, Ehrh.

- 1 *P. squarrosa*, Brid.

XVIII—BRYEAE.

1. LEPTOBRYUM, Sch.

- 1 *L. pyriforme*, Schimper.

2. BRYUM, Dill.

- 1 *B. inclinatum*, Br. and Sch.
- 2 *B. warneum*, Bland.
- 3 *B. calophyllum*, Br. and Sch.

-
- 4 *B. uliginosum*, Br. and Sch.
 - 5 *B. intermedium*, Brid.
 - 6 *B. binum*, Schreb.
 - 7 *B. atropurpureum*, W. and Mohr.
 - 8 *B. alpinum*, Linn.
 - 9 *B. Wahlenbergii*, Schwaegr.
 - 10 *B. argenteum*, Linn.
 - 11 *B. caespiticium*, Linn.
 - 12 *B. obeonicum*, Hornsch.
 - 13 *B. pallens*, Swartz.
 - 14 *B. pseudotriquetrum*, Schwaegr.
 - 15 *B. roseum*, Schreb.
 - 16 *B. Zierii*, Dicks.
 - 17 *B. demissum*, Hook.
 - 18 *B. cernuum*, Hedw. ; Br. and Sch. in Lesq.
 - 19 *B. donianum*, Grev.
 - 20 *B. sanguineum*, Brid.
 - 21 *B. julaceum*, Sm. ; var. *majus*, Schwaegr.
 - 22 *B. acuminatum*, Br. and Sch.
 - 23 *B. Tozeri*, Grev.
 - 24 *B. polymorphum*, Br. and Sch.
 - 25 *B. elongatum*, Dicks.
 - 26 *B. crudum*, Schreb.
 - 27 *B. nutans*, Schreb.
 - 28 *B. annotinum*, Hedw.
 - 29 *B. carneum*, Linn.
 - 30 *B. Ludwigii*, Spreng ; Br. and Sch.
 - 31 *B. Mawatii*, (?) Wilson.

3. ORTHODONTIUM, Müll.

- 1 *O. gracile*, Müll.

4. MNIUM, Linn.

- 1 *M. cuspidatum*, Hedw.
- 2 *M. rostratum*, Schwaegr.
- 3 *M. affine*, Bland.
- 4 *M. hornum*, Linn.
- 5 *M. serratum*, Brid.
- 6 *M. stellare*, Hedw.
- 7 *M. cinclidoides*, Hueben.
- 8 *M. punctatum*, Hedw.
- 9 *M. subglobosum*, Br. and Sch.
- 10 *M. undulatum*, Hedw.

5. CINCLIDIUM, Swartz.

- 1 *C. stygium*, Swartz.

XIX.—AULACOMNIEAE.

1. AULACOMNIUM, Schwaegr.

- 1 *A. androgynum*, Schwaegr.
- 2 *A. palustre*, Schwaegr.

XX.—POLYTRICHEAE.

1. ATRICHUM, Beauv.

- 1 *A. undulatum*, Beauv.

2. OLIGOTRICHUM, DC.

- 1 *O. hercynicum*, DC.

3. POGONATUM, Beauv.

- 1 *P. nanum*, Brid.
- 2 *P. aloides*, Brid.
- 3 *P. urnigerum*, Beauv.
- 4 *P. alpinum*, Brid.

4. POLYTRICHUM, Lian.

- 1 *P. sexangulare*, Hoppe.
- 2 *P. gracile*, Menz.
- 3 *P. formosum*, Hedw.
- 4 *P. commune*, Linn., var. *minus*. (?)
- 5 *P. juniperum*, Hedw., var. *strictum*, Wallm.
- 6 *P. piliferum*, Schreb.

XXI—BUXBAUMIEAE.

1. DIPHYSCIUM, Mohr.

- 1 *D. foliosum*, Web. and Mohr.

XXII—FONTINALEAE.

1. FONTINALIS, Dill.

- 1 *T. antipyretica*, Linn.
- 2 *T. squamosa*, Linn ; *Auctorum*.

XXIII—NECKEREAEE.

1. CRYPHAEA, Mohr.

1. *C. heteromalla*, Brid.

2. DALTONIA, Cook and Tayl.

- 1 *D. splachnoides*, H. and Tayl.

3. LEPTODON, Mohr.

- 1 *L. Smithii*, Brid.

4. NECKERA, Hedw.

- 1 *N. complanata*, Br. and Sch.
2 *N. crispa*, Hedw.
3 *N. pumila*, Hedw.

4. HOMALIA, Brid.

- 1 *H. trichomanoides*, Br. and Sch.

XXIV—LEUCODONTEAE.

1. LEUCODON, Schwaegr.

- 1 *L. sciuroides*, Schwaegr.
2 *L. lagurus*, var. *borealis*, Rev. Dr. C. Smith.

2. PTEROGONIUM, Sw.

- 1 *P. filiforme*, Hedw.
2 *P. gracile*, Swartz.

3. ANTITRICHIA, Brid.

- 1 *A. curtispindula*, Brid.

XXV—HOOKERIEAE.

1. HOOKERIA, Tayl.

- 1 *H. lucens*, Dill.; *H. lucens*, Smith, in Lesq.
2 *H. laetevirens*, Hook. and Tayl.

XXVI—LESKEAE.

1. LESKEA, Hedw.

- 1 *L. polycarpa*, Ehrh.
- 2 *L. pulvinata*, Wahl.
- 3 *L. moniliformis*, Wahl.
- 4 *L. latebricola*, Wils.
- 5 *L. Sprucei*, Bruch.
- 6 *L. polyantha*, Hedw.
- 7 *L. sericea*, Hedw.
- 8 *L. rufescens*, Schwaegr.
- 9 *L. subrufa*, Wils.

2. ANOMODON, Hook and Tayl.

- 1 *A. viticulosus*, Hook and Tayl.

XXVII—ORTHOTHECIEAE.

1. CYLINDROTHECIUM, Br. and Sch.

- 1 *C. Montagnei*, Br. and Sch.

2. CLIMACIUM, Web. and Mohr.

- 1 *C. dendroides*, Web. and Mohr.

XXVIII—HYPNEAE.

1. HYPNUM, Dill.

- 1 *H. atrovirens*, Dicks.

2. HETEROCLADIUM, Br. and Schimper.

- 1 *H. dimorphum*, Brid.

3. THUIDIUM, Schimp.

- 1 *H. tamariscinum*, Hedw.
- 2 *H. abietinum*, Linn.
- 3 *H. blandovii*, W. and Mohr.
- 4 *H. delicatulum*, Linn.

4. CAMPTOTHECIUM, Schimp.

- 1 *H. nitens*, Schreb.
- 2 *H. lutescens*, Huds.

5. BRACHYTHECIUM, Schimp.

- 1 *H. salebrosum*, Hoffm.
- 2 *H. albicans*, Neck.
- 3 *H. rivulare*, Bruch.
- 4 *H. populeum*, Hedw.
- 5 *H. plumosum*, Sw.
- 6 *H. velutinum*, Hedw.
- 7 *H. rutabulum*, Linn.

6. SCLEROPODIUM, Schimp.

- 1 *H. caespitosum*, Wils.
- 2 *H. illecebrum*, Schwaegr.

7. ISOTHECIUM, Bridel.

- 1 *H. myosuroides*, Brid.
- 2 *H. myurum*, Brid.
- 3 *H. alopecum*, Linn.

8. EURHYNCHIUM, Schimp.

- 1 *H. piliferum*, Schreb.

2 *H. praelongum*, Dill. et Linn.; var. *stokesii*, Turn.; var. *atrovirens*, Bryol. Eur.; var. *pumilum*.

3 *H. crassinervium*, Tayl.

9. RAPIDOSTEGIUM, Lesq. et James.

1 *H. demissum*, Wils.

10. RHYNCHOSTEGIUM, Schimp.

1 *H. depressum*, Bruch.

2 *H. rusciforme*, Weis.

11. PLAGIOTHECIUM, Schimp.

1 *H. pulchellum*, Dicks.

2 *H. elegans*, Hook.

3 *H. denticulatum*, Dill.; var. *obtusifolium*, Turn.

4 *H. sylvaticum*, Dill.

5 *H. undulatum*, Dill.

6 *H. Muhlenbeckii*, Spruce.

7 *H. micans*, Wils.

12. AMBLYSTEGIUM, Schimp.

1 *H. serpens*, Dill.

2 *H. radiale*, Beauv.

3 *H. irriguum*, Hook. and Wils.

4 *H. fluviatile*, Sw.

5 *H. riparium*, Dill.

13. CAMPYLUM, Mitt.

1 *H. chrysophyllum*, Brid.

2 *H. stellatum*, Dill. (Schreb.)

3 *H. polygamum*, W. & Sch.

4. *H. polymorphum*, Hedw.

14. *HARPIDIUM*, Lesq. & James.

1 *H. aduncum*, Wils. (Hedw.)

2 *H. Kneiffii*, Sch.

3 *H. fluitans*, Linn.

4 *H. lycopodioides*, Neck.

5 *H. revolvens*, Swartz.

6 *H. uncinatum*, Hedw.

15 *CBATONEURUM*, Lesq. & James.

1 *H. filicinum*, Dill.

2 *H. commutatum*, Hedw.

16. *RHYTIDIUM*, Lesq. & James.

1 *H. rugosum*, Linn.

17. *CTENIUM*, Lesq. & James.

1 *H. crista castrensis*, Linn.

18. *CTENIDIUM*, Mitt.

1 *H. moluscum*, Hedw.

HYPNUM, proper, Lesq. & James.

1 *H. hamulosum*, Br. & Sch.

2 *H. cupressiforme*, Dill.

3 *H. pratense*, Koch.

4 *H. filiforme*, Brid. Var. of *H.*, *cupressiforme*, Linn.

20. LIMNOBIUM, Bruch. and Schimper.

- 1 *H. palustre*, Dill.
- 2 *H. ochraceum*, Turn.
- 3 *H. molle*, Dicks.
- 4 *H. arcticum*, Sommerf.

20. CALLIERGON, Lesq. & James.

- 1 *H. sarmentosum*, Wahl.
- 2 *H. cordifolium*, Hedw.
- 3 *H. cuspidatum*, Dill., Linn.
- 4 *H. Schreberi*, Willd.
- 5 *H. stramineum*, Dicks.
- 6 *H. trifarium*, Web. & Mohr.

22. SCORPIDIUM, Lesq. & James.

- 1 *H. scorpioides*, Linn.

23. PLEUROZIUM, Lesq. & James.

- 1 *H. splendens*, Hedw.
- 2 *H. umbratum*, Ehrh.
- 3 *H. brevirostre*, Ehrh.

24. HYLOCOMIUM, Schimper.

- 1 *H. squarrosum*, Linn.
- 2 *H. triquetrum*, Linn.
- 3 *H. loreum*, Linn.

ADDENDA TO HYPNUM, Lesq. & James.

- 1 *H. glareosum*, Bruch.

 XCVI—PHYCACEAE (sea-weeds).

I SUB-CLASS —MELANOSPERMEAE,

Sea-weeds with olive-colored spores.

I. FAMILY—FUCACEAE.

1. CYSTOSEIRA, Ag.

- 1 *C. granulata*, Linn. Morbihan, Fr., 1883.
- 2 *C. fibrosa*, Huds. Morbihan, Fr., 1883.
- 3 *C. discors*, Ag. Coast of Normandy, Fr., 1883.

2. FUCUS, Linn.

- 1 *F. vendo*, Linn. Coast of Normandy, Fr., 1883.
- 2 *F. serratus*, Linn. Coast of Normandy, Fr., 1883.
- 3 *F. nodosus*, Linn. Morbihan, Fr.
- 4 *F. canaliculatus*, Linn. Coast of Normandy, Fr.; 1883.
- 5 *F. vesiculosus*, Linn. Trinity Bay, North Shore, September, 1882.
- 6 *F. furcatus*, Linn. Trinity Bay, North Shore, September, 1882.
- 7 *F. filiformis*, Gm. Mingan Islands, St. Pierre, Great Mecatina, &c., 1885.

II. FAMILY—SPOROCHNACEAE.

1. DESMARESTIA, Lamx.

- 1 *D. ligulata*, Lightfoot. Coast of Normandy, Fr., 1883.
- 2 *D. aculeata*, Linn. Coast of Normandy, Fr.; Lobster Bay, North Shore, July, 1882.
- 2 *D. viridis*, Mühl. Coast of Normandy, Fr., 1883.

2. SPOROCHNUS, Ag.

- 1 *S. pedunculatus*, Huds. Coast of Morbihan, Fr., 1883.
- 2 *S. rhizodes*, Ag. Coast of Normandy, Fr., 1883.

III. FAMILY—LAMINARIACEAE.

1. LAMINARIA, Lamx.

- 1 *L. digitata*, Lamour. Coast of Normandy, Fr., 1883.
- 2 *L. bulbosa*, Huds. Coast of Normandy, Fr., 1883.
- 3 *L. saccharina*, Linn. Coast of Normandy, Fr., 1883.
 Var. saccharina, Linn. Coast of Normandy, Fr., 1883.
 Var. saccharina, Linn. Coast of Normandy, Fr., 1883.

2. CHORDA, Stackhouse.

- 1 *C. lomentaria*, Grev. Coast of Normandy, France, 1883.
 Var. lamentaria, Grev. Coast of Normandy, France, 1883.
- 1 *C. filum*, Linn. Coast of Normandy, France, 1883.

IV.—FAMILY—DICTYOTACEAE.

1. HALISERIS, Tozetti.

- 1 *H. polypodioides*, Desf. Coast of Normandy, France, 1883.

2 ACARUM, Gmelin.

- 1 *A. Turneris*, Post. and Rupr. Belle-Isle, North coast of Newfoundland, Mr. Paul de Cazes, 1884; Also Mingan Islands and Anticosti, &c.

3. PADINA, Adams.

- 1 *P. pavonia*, Linn. Coast of Normandy, France, 1883.

3. DICTYOTA, Lamx.

- 1 *D. dichotoma*, Huds. Coast of Normandy, France, 1883.
- 2 *D. divaricata*, Lamx. Coast of Normandy, France, 1883.

5. DICTYOSIPHON, Grev.

1. *D. fœniculaceum*, Huds. Trinity Bay, North shore, 1882.

6. PUNCTARIA, Grev.

1. *P. plantaginea*, Roth. Coast of Normandy, France.

7. ASPEROCOCCUS, Lamour.

1. *A. bulbosus*, Linn. Morbihan, France, 1883.

V. FAMILY—ECTOCARPACEAE.

1. CLODOSTEPHUS, Ag.

1. *C. verticillatus*, Lightfoot, coast of Normandy, France, 1883.

2. SPHACELARIA, Lyngb.

1. *S. plumosa*, Lyngb. Coast of Normandy, France, 1883.

3. ECTOCARPUS, Lyngb.

1. *E. firmus*, Lyngb. Coast of Normandy, France, 1883.
2. *E. tomentosus*, Huds. Coast of Normandy, Fr.

4. MYRIOTRICHIA, Harv.

1. *M. filiformis*, Harv. Coast of Normandy, France, 1883.

II. SUB-CLASS—RHODOSPERMEAE.

VI. FAMILY—RHODOMELACEAE.

1. ODONTHALIA, Lyngb.

1. *O. dentata*, Lyngb. St. Barnabé Island (Rimouski), 1885.

2. POLYSIPHONIA, Grev.

1. *P. fastigiata*, Roth. Coast of Normandy, Fr., 1883.
2. *P. Brodissi*, Dillw. Coast of Normandy, Fr., 1883.

Var Brodiei, Dillw. Coast of Normandy, Fr., 1883.

3 *P. fibrillosa*, Dillw. Coast of Normandy, Fr., 1883.

4 *P. byssodes*, Good & Woodw. Coast of Normandy, Fr., 1883.

Var byssodes, Good & Woodw. Coast of Normandy, Fr., 1883.

5 *P. thuyoides*, Greville. Coast of Normandy, Fr., 1883.

6 *P. filiformis*, Greville. Coast of Normandy, Fr., 1883.

7 *P. rosea*, Greville. Coast of Normandy, Fr., 1883.

3. DASYA, Ag.

1 *D. coccinea*, Huds. & Ag. Coast of Normandy, Fr., 1883.

Var. coccinea, Ag. (parasite). Coast of Normandy, Fr., 1883.

Var. coccinea, Ag. Coast of Normandy, Fr., 1883.

VII. FAMILY—LAURENCIACEAE.

1. LAURENCIA.

1 *L. pinnatifida*, Grew. Morbihan, Fr., 1883.

2 *L. obtusa*, Huds. & Lamx. Coast of Normandy, Fr., 1883.

3 *L. dasyphylla*, Woodw. & Lamx. Coast of Normandy, Fr., 1883.

4 *L. rosea*, Lamx. Coast of Normandy, Fr., 1883.

5 *L. pgramidalis*, Lamx. Coast of Normandy, Fr., 1883.

6 *L. arbuscula*, Lamx. Coast of Normandy, Fr., 1883.

2. CHILOCLADIA, Grew.

1 *C. kaliformis*, Good & Woodw. Coast of Normandy, Fr., 1883.

3. LOMENTARIA, Lyngb.

1 *L. articulata*, Lyngb. Coast of Normandy, Fr., 1883.

Var articulata, Lyngb. Coast of Normandy, Fr., 1883.

2 *L. kaliformia*, Lamx. Coast of Normandy, Fr., 1883.

3 *L. ovalis*, Grev. Coast of Normandy, Fr., 1885.

VIII. FAMILY—DELESSERIAEAE.

1 DELESSERIA, Lamx.

1 *D. sanguinea*, Lamx. Coast of Normandy, France, 1883.

2 *D. alata*, Lamx. Coast of Normandy, Fr., 1883.

3 *D. sinuosa*, Good & Woodward. Coast of Normandy, Fr., 1883.

2. PLOCAMIUM, Lamx.

1 *P. coccineum*, Huds. & Lyngb. Coast of Normandy, France, Fr., 1883.

Var coccineum, Lyngb. Coast of Normandy, Fr., 1883.

2 *P. vulgare*, Lyngb. Coast of Normandy, Fr., 1883.

IX. FAMILY—RHODYMENIACEAE.

1. RHODYMENIA, Grev.

1 *R. bifida*, Good & Woodw. Coast of Normandy, Fr., 1883.

2 *R. laciniata*, Huds. Coast of Normandy, Fr., 1883.

3 *R. palmetta*, Esper. Coast of Normandy, Fr., 1883.

4 *R. Jubata*, Good & Woodw. Coast of Normandy, Fr., 1883.

5 *R. palmata*, Linn. West coast of Newfoundland, August, 1883.

Var. palmata, Linn. & Faucher de Saint Maurice. West coast Newfoundland, August, 1882.

2. HYPNEA, Lamx.

1 *H. purpurescens*, Harv. Coast of Normandy, Fr., 1883.

X. FAMILY—CRYPTOTENIACEAE.

1. GRATELOUPIA, Ag.

1 *G. filicina*, Wulf, Ag. Coast of Normandy, Fr., 1883.

2. GELIDIUM, Lamx.

1 *G. acanthonotum*, Lamx. Coast of Normandy, Fr., 1883.

2 *G. corneum*, Huds. & Lamx. Coast of Normandy, Fr., 1883.

3. GIGARTINA, Lamx.

1 *G. compressa*. Coast of Normandy, Fr., 1883.

2 *G. confervoides*. Coast of Normandy, Fr., 1883.

Var. *cnfervoides*. Coast of Normandy, Fr., 1883.

4. CHONDRUS, Lamx.

1 *C. crispus*, Linn. Coast of Normandy, Fr., 1883.

2 *C. norvegicus*, Gunn, Lamx. Coast of Normandy, Fr., 1883.

5. PHYLLOPHORA, Grev.

1 *P. rubens*, Linn. Coast of Normandy, Fr., 1883.

6. CYSTOCLONIUM, J. Ag.

1 *C. purpurascens*, Kütz. La Malbaie, (Charlevoix), August, 1878, and Coast of Normandy, France, 1883.

7. HALYMENIA, Mont.

1 *H. lacerata*. Coast of Normandy, Fr., 1883.

Var. *lacerata*. Coast of Normandy, Fr., 1883.

2 *H. Gmelini*. Coast of Normandy, Fr., 1883.

Var. *Gmelini*. Coast of Normandy, Fr., 1883.

8. GINANNIA, Mont.

1 *G. furcellata*, Mont. Coast of Normandy, Fr., 1883.

9. IRIDAEA, Bory.

1 *I. edulis*, Stackh. Coast of Normandy, Fr., 1883.

10. DUDRESNEYA, BONNEM, MESOGLOIA.

- 1 *D. divaricata*, J. Ag. Coast of Normandy, Fr., 1883.

XI. FAMILY—CERAMIACEAE.

1. PTILOTA, Ag.

- 1 *P. plumosa*, Harvey. Coast of Normandy, Fr., 1883.
 2 *P. serrata*, Kütz. La Malbaie, (Charlevoix), August, 1872.

2. CERAMIUM, Roth.

- 1 *C. rubrum*, Huds. Ag. Coast of Normandy, Fr., 1883.
 2 *C. diaphanum*, Ag. Coast of Normandy, Fr., 1883.
 Var. diaphanum, Ag. Coast of Normandy, Fr., 1883.
 Var. diaphanum, Ag. Coast of Normandy, Fr., 1883.
 3 *C. echinotum*, J. Ag. Coast of Normandy, Fr., 1883.
 4 *C. cruciatum*, Ag. Coast of Normandy, Fr., 1883.
 Var. cruciatum, Ag. Coast of Normandy, 1883.
 5 *C. spongiosum*, Ag. Coast of Normandy, Fr., 1883.

3. GRIFFITHSIA, Ag.

- 1 *G. equisetifolia*, Ag. Lightf. Coast of Normandy, Fr., 1883.
 2 *G. secundiflora*, J. Ag. Coast of Normandy, Fr., 1883.
 3 *G. setacea*, Ellis, J. Ag. (In fruit). Coast of Normandy, Fr.,
 1883.

4. WRANGELIA, Ag.

- 1 *W. multifida*, Huds. J. Ag. Coast of Normandy, Fr., 1883.

5 CALLITHAMNIUM, Lyngb.

- 1 *C.*—, Mingan Island, July, 1882.

III. SUB-CLASS—CHLOROSPERMEAE.

XII—FAMILY—CONFERVACEAE.

1. CONFERVA, Plin.

- 1 *C. albida*. Coast of Normandy, Fr., 1883.

XIII. FAMILY—ULVACEAE.

1. ENTEROMORPHA, Link.

- 1 *E. compressa*, Linn. Coast of Normandy, Fr., 1883.
2 *E. intestinalis*, Linn. Coast of Normandy, Fr., 1889.

2. ULVA, Linn.

- 1 *U. lactuca*, Linn. Coast of Normandy, Fr., 1883.
2 *U. enteromorpha*, (Macoun), Lobster Bay, August, 1882.

3. PORPHYRA, Ag.

- 1 *P. vulgaris*, Ag. Coast of Normandy, Fr., 1883.
2 *P. purpurea*, Grev. Coast of Normandy, Fr., 1883.
3 *P. linearis*, Grev. Coast of Normandy, Fr., 1883.

XIV. FAMILY—BATRACHOSPERMACEAE.

1. MYRIOCLADIA, Ag.

- 1 *M. chordariaeformis*, Ag. Coast of Normandy, Fr., 1883.
-

ERRATA.

Page 4, Between *from* and *two*, add *two hundred to*.

" 7, line 33,	Instead of <i>we we were</i> read <i>we were</i> .	
" 11, " 25,	" <i>Poste,</i>	read <i>Postes.</i>
" 12, " 2,	" <i>Basin,</i>	" <i>Bason.</i>
" 12, " 33,	" <i>was,</i>	" <i>is.</i>
" 27, " 25,	" <i>America,</i>	" <i>the New England States.</i>
" 40, " 23,	" <i>strapa,</i>	" <i>satrapa.</i>
" 44, " 14,	" <i>carolinensis,</i>	" <i>Carolinensis.</i>
" 48, " 10,	" <i>The morse,</i>	" <i>Le Morse.</i>
" 48, " 11,	" <i>years,</i>	" <i>ears.</i>
" 48, " 33,	" $\frac{5}{4} \frac{5}{4}$	" $\frac{5-5}{4-4}$
" 48, " 37,	" $\frac{1}{0} \frac{1}{0} \frac{4}{4} \frac{4}{4}$	" $\frac{1-1}{0-0} \frac{4-4}{4-4}$
" 51, " 29,	" <i>The Sea-Lion,</i>	" <i>Le Lion marin.</i>
" 52, " 7,	" <i>The Lion,</i>	" <i>Le Lion, etc.</i>
" 53, " 8,	" <i>Synonymous,</i>	" <i>Synonym.</i>
" 53, " 11,	" <i>The Sea-Bear,</i>	" <i>L'Ours-marin.</i>
" 65, " 9,	" <i>Linn, 1766,</i>	" <i>Linn. (1766).</i>
" 70, " 23,	" <i>from</i>	" <i>with.</i>
" 73, " 33,	" <i>conical.</i>	" <i>cervical.</i>
" 81, " 8,	After the word <i>black</i> , add the word <i>above</i> .	
" 85, " 34,	Instead of <i>whale</i> , read	<i>males.</i>
" 91, " 35,	" <i>selis,</i>	" <i>setis.</i>
" 102, " 8,	" <i>pelifolia,</i>	" <i>polifolia,</i>
" 103, " 21,	" <i>Scrophulariaceae</i>	" <i>Scrophulariaceae.</i>
" 120, " 2,	" <i>Dev,</i>	" <i>Deav.</i>
" 133, " 21,	" <i>Gemelini,</i>	" <i>Gmelini.</i>
" 137, " 11,	" <i>Houstonia,</i>	" <i>Houstonia,</i>
" 138, " 21,	" <i>umbellatus,</i>	" <i>umbellatus.</i>
" 141, " 18,	" <i>Erechtites,</i>	" <i>Erechthites.</i>
" 141, " 24,	" <i>borealis,</i>	" <i>borealis.</i>
" 142, " 2,	" <i>cyamus,</i>	" <i>cyanus.</i>
" 143, " 15,	" <i>coeruleum,</i>	" <i>coeruleum.</i>
" 147, " 7,	" 1	" § 1.
" 147, " 8,	" 2	" 1.
" 147, " 9,	" 3	" 2.
" 147, " 10,	" 4	" § 2.
" 147, " 11,	" 5	" 3
" 179, " 13,	" <i>St. Joseph,</i>	" <i>Lake St. Joseph,</i>
" 180, " 23,	" <i>M. A.</i>	" <i>F. G. S.</i>
" 182, " 8,	" <i>L'hér,</i>	" <i>L'Her,</i>

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